

THE JOURNAL OF MEDICAL EDUCATION

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See Saunders advertisement just inside



4 NEW...

McGraw-Hill Books

OUTLINE OF PHYSIOLOGY

By L. L. Langley, Ph.D., LL.B., 564 pp., 6½ x 8½, 149 illus., \$5.50

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By E. Lawrence House, Ph.D., and Ben Pansky, Ph.D., 494 pp., 7¼ x 9¾, illus., \$12.50

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of Cutaneous Medicine

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ful to point out hazards involved in using them. Terminology is kept as simple as possible.

By DONALD M. PILLSBURY, M.A., D.Sc., (Hon.), M.D., F.A.C.P., Professor and Director of Department of Dermatology, University of Pennsylvania School of Medicine; WALTER B. SHELLEY, M.D., Ph.D., F.A.C.P., Professor of Dermatology, University of Pennsylvania; and ALBERT M. KLIGMAN, M.D., Ph.D., Professor of Dermatology, University of Pennsylvania. About 496 pages, 6½" x 9¼", with about 234 illustrations. About \$10.00. *New—Ready April, 1961!*

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predominantly clinical, dealing with psychiatry in action. A considerably expanded review of the field, this edition includes more case histories and allusions to clinical applications of basic behavioral phenomena.

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INFORMATION FOR CONTRIBUTORS

The Journal of Medical Education serves as an international medium for the exchange of ideas in medical education, as well as a means of communicating the policies, programs, and problems of the Association. The Editorial Board welcomes the submission of manuscripts concerned with the broad field of medical education; this includes preparation for medical education; the medical school experience; intern and resident education; graduate and postgraduate medical education. The Editorial Board recognizes that medical education includes the activities of faculty, students, administrators, and those of the practicing profession who also teach and learn. Thus, it invites communications from any of these sources.

Manuscripts should be submitted in duplicate. All manuscripts are reviewed by the Editorial Board before acceptance for publication. All copy, including footnotes, tables, and legends, should be typed double-spaced. Each diagram or graph or photograph should have a brief legend. Each table should be typed on a separate sheet of paper. References should refer to published material only, must be submitted in alphabetical order, and should include, in order: author, title, journal abbreviation (*Quarterly Cumulative Index Medicus* form), volume number, page, and year; book references should also include editors, edition, publisher, and place of publication.

Galley proofs will be mailed to authors for correction before publication and should be returned within 48 hours after receipt.

Reprints may be ordered, when galley proofs are returned, in multiples of 100, at a price depending on the length of the article; prices are listed on the reprint order form.

Medical Education Forum includes editorials, letters, comments, criticisms, and excerpts from important addresses.

News from the Medical Schools: Material for this section should be transmitted to the News Editor, Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

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Address all correspondence regarding manuscripts, editorials, and letters to the Editor to the Editorial Office, University Hospitals, University of Wisconsin, Madison 6, Wisconsin.

Address all correspondence concerning reprints, subscriptions, change of address, and back numbers to the Business Office, Association of American Medical Colleges, 2530 Ridge Ave., Evanston, Ill. All changes of address should provide both the old and the new address.

Address all correspondence concerning news, announcements, and personnel exchange to the office of the Association of American Medical Colleges, c/o Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois; address all correspondence concerning advertising to Miss Helen Claire Herman, 2530 Ridge Avenue, Evanston, Illinois.

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FIRST AID: DIAGNOSIS AND MANAGEMENT

By **Warren H. Cole, M.D., F.A.C.S.**

Professor and Head of the Department of Surgery,
University of Illinois College of Medicine

and **Charles B. Puestow, M.D., F.A.C.S.**

University of Illinois College of Medicine and Chief, Surgical Service,
Veterans Administration Hospital, Hines, Illinois; with 16 collaborating physicians.

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THE CONTRIBUTING AUTHORS

- Geza de Takats**
Injuries to Large Blood Vessels
- Archer S. Gordon**
Respiratory Emergencies
- Paul W. Greeley**
Burns, Frostbite
- Fred W. Hark**
Fractures, Dislocations, and Sprains
- Joseph H. Kiefer**
Emergencies of the Genitourinary Tract
- Burton C. Kilbourne**
First Aid in Industry
- Claude N. Lambert**
Open Fractures; Open Dislocations
- Harold C. Lueth**
Missiles, Rockets, Nuclear Bombs,
and other Forms of Attack
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Medical Emergencies
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First Aid in Industry
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- Louis W. Schultz**
Wounds of the Mouth, Face, and Neck
- Lindon Seed**
Transportation of the Injured
- Eric Oldberg**
Injuries to the Scalp, Skull, Spine,
and Nervous System

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Calendar of Meetings

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

72nd Annual Meeting, Nov. 13-15, 1961

Queen Elizabeth Hotel, Montreal, Canada

1961

MARCH

AMERICAN ASSOCIATION OF ANATOMISTS, Pick-Congress Hotel, Chicago, Mar. 21-24. Dr. Louis B. Flexner, Dept. of Anat., School of Med., Univ. of Pa., Philadelphia 4, Secretary-Treasurer.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Statler Hilton, New York City, Mar. 23-25. Dr. Marion F. Langer, 1790 Broadway, New York 19, Executive Secretary.

AMERICAN SURGICAL ASSOCIATION, Boca Raton Hotel, Boca Raton, Fla., Mar. 20-24. Dr. W. A. Altemeier, Cincinnati General Hosp., Cincinnati 29, Ohio, Secretary.

APRIL

AEROSPACE MEDICAL ASSOCIATION (32nd annual meeting), Chicago, Apr. 24-26. Dr. Willson J. Kennard, c/o Washington National Airport, Washington, D.C., Secretary-Treasurer.

AMERICAN ACADEMY OF GENERAL PRACTICE, Miami Beach, Fla., Apr. 13-20. Mr. Mac F. Cahal, Volker Blvd. at Brookside, Kansas City 12, Mo., Executive Director.

AMERICAN ACADEMY OF NEUROLOGY (members and guests), Sheraton-Cadillac Hotel, Detroit, Apr. 27-29. Mrs. J. C. McKinley, 4307 E. 50th St., Minneapolis 17, Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, spring meeting, Sheraton-Park Hotel, Washington, D.C., Apr. 10-12. For information write Dr. E. H. Christopherson, 1801 Hinman Ave., Evanston, Ill., Executive Director.

AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS, Chicago, April 26-28. For information write: The Intersociety Committee on Pathology Information, 1785 Massachusetts Ave., N. W., Washington 6, D. C.

AMERICAN ASSOCIATION FOR THORACIC SURGERY, Sheraton Hotel, Philadelphia, Apr. 24-26. Dr. Hiram T. Langston, 308 Carondelet Bldg., 7730 Carondelet Ave., St. Louis 5, Secretary.

AMERICAN COLLEGE HEALTH ASSOCIATION, Detroit, Apr. 26-29. Dr. Norman S. Moore, Cornell University, Gannett Clinic, Ithaca, N.Y., Secretary-Treasurer.

AMERICAN COLLEGE OF OBSTETRICIANS AND GYNCOLOGISTS, Americana Hotel, Miami Beach, Fla., Apr. 21-28. Mr. Donald F. Richardson, 79 W. Monroe St., Chicago 3, Executive Secretary.

AMERICAN FEDERATION FOR CLINICAL RESEARCH, Haddon Hall, Atlantic City, Apr. 30. James E. Bryan, 250 W. 57th St., New York 19, Executive Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY, Atlantic City, N.J., Apr. 10-14. Mr. Ray G. Dages, 9650 Wisconsin Ave., Washington 14, D.C., Executive Secretary.

AMERICAN PSYCHOSOMATIC SOCIETY, INC., Chalfonte-Haddon Hall, Atlantic City, Apr. 29-30. Joan K. Erpf, 265 Nassau Rd., Roosevelt, N.Y., Executive Assistant.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, INC., Atlantic City, Apr. 10-14. Mr. Frank W. Putnam, University of Florida College of Medicine, Department of Biochemistry, Gainesville, Executive Secretary.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY, Atlantic City, Apr. 10-14. Dr. J. F. A. McManus, Univ. of Alabama Med. Center, Birmingham, Ala., Executive Secretary.

AMERICAN SOCIETY OF MAXILLOFACIAL SURGEONS, Barbizon-Plaza, New York City, Apr. 17-20. Dr. Edward C. Hinds, P.O. Box 20068, Houston 25, Texas, Secretary-Treasurer.

U. S. PUBLIC HEALTH SERVICE CLINICAL SOCIETY, U. S. P. H. S. Hospital, Lexington, Ky., Apr. 5-8. Dr. John H. Waite, President of the National Chapter, U. S. Public Health Service Clinical Society, U. S. P. H. S. Hospital, P. O. Box 3145, Seattle 14.

MAY

AMERICAN ASSOCIATION OF GENITO-URINARY SURGEONS (for members and invited guests), Del Monte Lodge, Pebble Beach, Calif., May 10-12. Dr. William J. Engel, Cleveland Clinic, 2020 E. 93rd St., Cleveland 6, Ohio, Secretary-Treasurer.

AMERICAN ASSOCIATION FOR THE HISTORY OF MEDICINE, Shoreland Hotel, Chicago, May 18-20. Dr. John B. Blake, c/o Smithsonian Institution, Washington 25, D. C., Secretary-Treasurer.

AMERICAN COLLEGE OF CARDIOLOGY, INC., Biltmore Hotel, May 16-20. Dr. Philip Reichert, 350 Fifth Ave., Empire State Bldg., New York 1, Executive Director.

AMERICAN COLLEGE OF PHYSICIANS, Americana Hotel, Miami Beach, Fla., May 8-12. Dr. Edward C. Rosenow Jr., 4200 Pine St., Philadelphia 4, Executive Director.

AMERICAN GASTROENTEROLOGICAL ASSOCIATION, Drake Hotel, Chicago, May 25-27. Dr. Wade Volwiler, Dept. of Med., Univ. of Washington, Seattle 5, Secretary.

AMERICAN ORTHOPAEDIC ASSOCIATION (members and guests), The Ahwahnee, Yosemite, Calif., May 22-25. Dr. Lee Ramsay Straub, 535 E. 70th St., New York 21, Secretary.

AMERICAN PSYCHIATRIC ASSOCIATION, Morrison Hotel, Chicago, May 8-12. Dr. C. H. Hardin Branch, 156 Westminster Ave., Salt Lake City 15, Utah, Secretary.

AMERICAN SOCIETY OF INTERNAL MEDICINE, Eden Rod Hotel, Miami Beach, Fla., May 5-7. Mr. G. Tod Bates, 350 Post St., San Francisco 8, Executive Director.

AMERICAN UROLOGICAL ASSOCIATION, INC., Biltmore Hotel, Los Angeles, May 22-25. Mr. William P. Diduch, 1120 N. Charles St., Baltimore 1, Executive Secretary.

ASSOCIATION OF AMERICAN PHYSICIANS, Chalfonte-Haddon Hall, Atlantic City, May 2-3. Dr. Paul B. Reeson, Yale University School of Medicine, New Haven 11, Conn., Secretary.

STUDENT AMERICAN MEDICAL ASSOCIATION, Congress, Chicago, May 3-7. Mr. Russell F. Staudacher, 430 N. Michigan Ave., Chicago 11, Executive Director.

JUNE

AMERICAN COLLEGE OF ANGIOLOGY, Savoy-Hilton Hotel, New York City, June 23-25. Alfred Halpern, Ph.D., 11 Hampton Court, Great Neck, N. Y., Secretary.

AMERICAN COLLEGE OF CHEST PHYSICIANS, Hotel Commodore, New York City, June 22-26. Mr. Murray Kornfeld, 112 E. Chestnut St., Chicago, Executive Director.

AMERICAN DERMATOLOGICAL ASSOCIATION, INC. (members only), Castle Harbour Hotel, Tucker's Town, Bermuda, June 16-20. Dr. Wiley M. Sams, 25 S. E. Second Ave., Miami 32, Fla., Secretary.

AMERICAN MEDICAL ASSOCIATION, ANNUAL MEETING, New York City, June 25-30. Dr. F. J. L. Blasigame, 535 N. Dearborn, Chicago 10, Executive Vice-President.

AMERICAN NEUROLOGICAL ASSOCIATION, Hotel Claridge, Atlantic City, June 12-14. Dr. Melvin D. Yahr, Neurological Institute, 710 W. 168th St., New York 32, Executive Secretary.

New 1961 Book

Multiple-Choice Examinations in Medicine

A Guide for Examiner and Examinee

By **JOHN P. HUBBARD, M.D.**

Professor and Head of the Department of Public Health and Preventive Medicine,
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Professor and Head of the Department of Anatomy, University of Colorado School of Medicine, Denver

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Henderson Professor of Medicine, Tulane University School of Medicine, New Orleans

and **TRAVIS WINSOR, M.D., F.A.C.P.**

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CONTENTS: Part I, The Principles of Pathology. Pathology. Inflammation, repair and regeneration. Necrosis. Local metabolic, histochemical and nutritional lesions. Fluid and blood vascular disturbances. Obstruction to hollow viscera. Physical injury. Chemical injury. Infectious disease. Connective tissue and allergic diseases. Heredity, growth and senescence. Congenital malformations. Cancer and other tumors. Part II, Diseases of Organ Systems. The cardiovascular system. The respiratory system. The alimentary tract, liver and pancreas. The genitourinary system. The blood-forming organs. The endocrine glands. The skin. The musculoskeletal system. The nervous system.

By **ROGER D. BAKER, M.D.**, *Professor of Pathology, Duke University School of Medicine; Chief of Laboratory Service, Veterans Administration Hospital, Durham, North Carolina.*

1961

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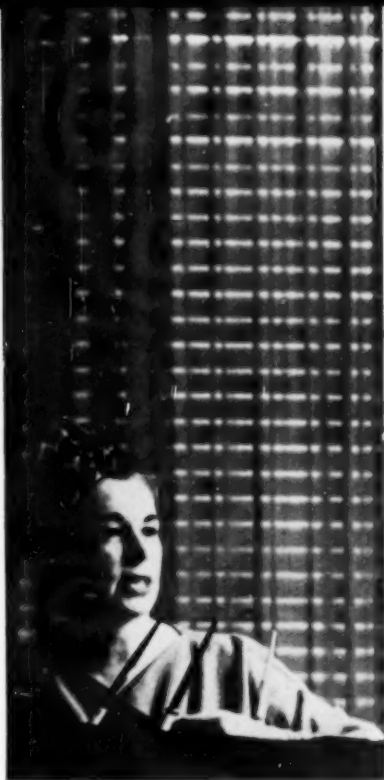
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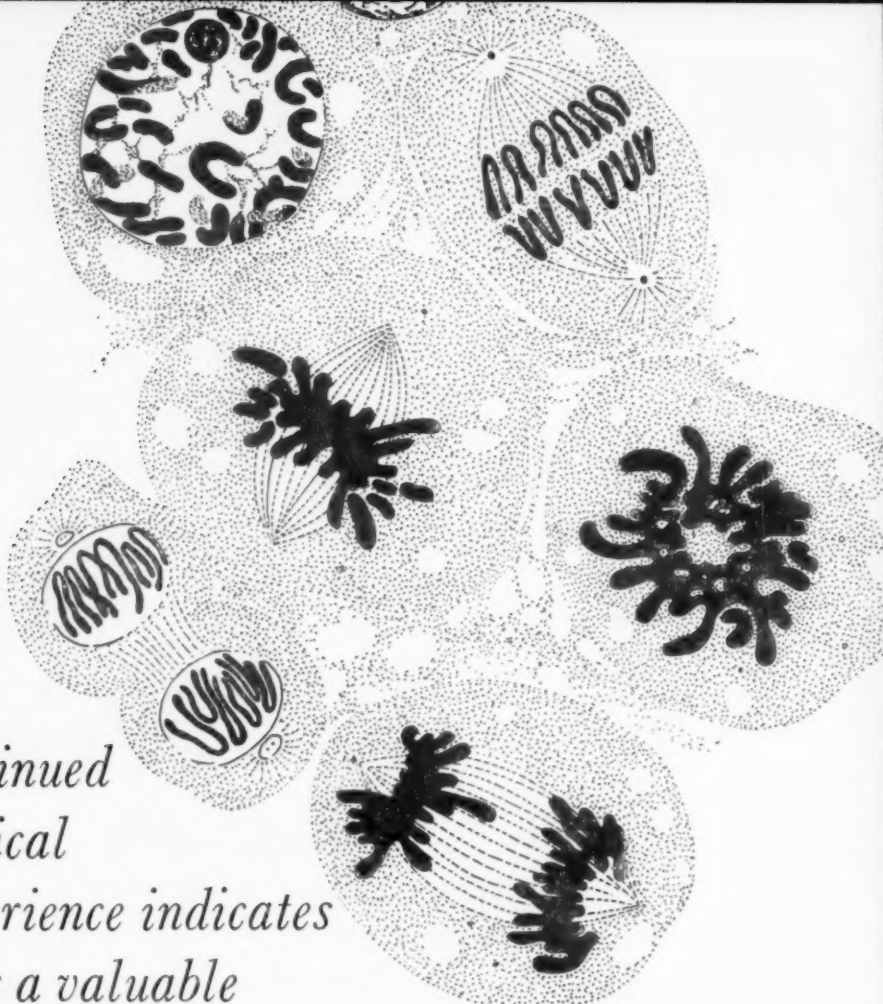
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^{*}Papac, R.; Petrakis, N. L.; Amini, F., and Wood, D. A.: J.A.M.A. 172:1387-1391 (March 26) 1960.

DOSAGE: For neoplasms relatively susceptible to Cytoxan—Patients with lymphomas and other neoplasms believed to be relatively susceptible to Cytoxan therapy are given an initial dose of 2-3 mg./Kg./day intravenously. White blood counts and platelet determinations should be made daily or twice weekly and the dosage adjusted accordingly. Intravenous infusions should be continued for at least 6 days unless otherwise indicated. A leukopenia of between 1500 and 5000 cells per cu. mm. (or lower) may be expected between the tenth and fourteenth day. In the presence of a leukopenia of less than 2000/cu. mm. Cytoxan should be discontinued until the white cell count returns to 2000 to 5000 (usually within a week). Dosage is subsequently adjusted as indicated by the patient's objective response and the leukocyte count. If the patient is subjectively improved, if the size of the tumor has decreased, or if the white cells are satisfactorily maintained between 2000 and 5000/cu. mm. oral dosage may be instituted equivalent to intravenous dosage.

Thrombocytopenia is rarely observed on this regimen. If platelet counts of less than 100,000/cu. mm. are observed, the patient should be watched carefully. If platelets continue to decrease, Cytoxan should be discontinued.

The patient who has had previous treatment with alkylating agents, or x-ray, or is debilitated may be more susceptible to bone marrow depression, and initial Cytoxan doses should be more conservative than the above. Such patients should have more frequent hematologic evaluation. Good medical practice demands access to a reliable hematologic laboratory when using Cytoxan.

For neoplasms relatively resistant to Cytoxan—Patients with carcinomas and other malignant neoplasms believed to be less susceptible to Cytoxan therapy are given a dose of 4 to 8 mg./Kg./day intravenously. Unless there are indications to the contrary, this dose is continued for 6 days, then stopped. Leukopenia usually ensues on the tenth to fourteenth day after the first dose of Cytoxan. Thrombocyte reduction is not common, and platelets may actually increase. The leukocyte count promptly returns toward normal levels in most cases, and as it begins to increase, sufficient Cytoxan is administered to maintain it near 2000 to 5000/cu. mm. This may be accomplished by two intravenous injections weekly, or by oral administration, or by a combination of both routes. An oral dosage of 50 to 200 mg. daily or an intravenous injection of 5 mg./Kg. twice weekly will usually suffice.

The platelet and leukocyte counts should be followed carefully, and the prior treatment history of patients carefully evaluated as delineated above.

Leukopenia as a guide to adequacy of dosage—The best objective measure for dosage seems to be the number of circulating white blood cells. This is used as an index of the activity of the hematopoietic system, especially the bone marrow. The mechanism by which Cytoxan causes a reduction in the level of white blood cells is not known, but cessation of dosage results in an increase in the level, indicating that the hematopoietic system had not been permanently affected. When large doses (8 mg./Kg./day for 6 days) are given initially, the white cell count falls rapidly. Following the cessation of the 6-day course, the white cells may continue to decline for as long as 8 days and then increase. The reduction of the white cell count during Cytoxan therapy and its subsequent increase when therapy is discontinued can be repeated in the same patient. Maximal reduction in leukocyte count indicates the maximal permissible Cytoxan level for therapeutic effect. Leukopenic patients must be watched carefully for evidence of infection.

Total white blood cell and thrombocyte counts should be obtained 2 or more times weekly in order to evaluate therapy and to adjust dosage.

SIDE EFFECTS: Although Cytoxan is related to nitrogen mustard, it has no vesicant effect on tissue. It does not traumatize the vein when injected intravenously, nor does it cause any localized tissue reaction following extravasation. It may be administered intravenously, intramus-

cularly, intraperitoneally, intrapleurally or directly into the tumor, when indicated. It is apparently active by each of these routes.

Nausea and vomiting are common and depend on dose and on individual susceptibility. However, many investigators accept the nausea and vomiting in favor of maintaining maximal therapy. The vomiting can be controlled with antiemetic agents.

Alopecia is a frequent side reaction to Cytoxan therapy. It has been observed in 28% of the patients studied in this country. The incidence is greater with larger doses. The loss of hair may first be noted about the 21st day of therapy and may proceed to alopecia totalis. This effect is reversed following discontinuance of Cytoxan; during reduced maintenance therapy, hair may reappear. It is essential to advise the patient in advance concerning this effect of the drug.

Dizziness of short duration and of minor degree has occasionally been reported.

Leukopenia is an expected effect and can be used as a guide to therapy. Thrombocytopenia may occur, especially after large doses. The leukocyte or platelet counts of an occasional patient may fall precipitously after even small doses of Cytoxan, as with all alkylating agents. The drug should be discontinued in such patients and reinstituted later at lower dosage after satisfactory hematologic recovery has occurred. Prior treatment with x-ray or with other chemotherapeutic agents frequently causes an earlier or exaggerated leukopenia or thrombocytopenia after Cytoxan medication. Only rarely has there been a report of erythrocyte or hemoglobin reduction.

ADMINISTRATION: Add 5 cc. sterile water (Water for Injection, U.S.P.) to 100 mg. of Cytoxan in the sterile vial (add 10 cc to 200 mg. vial). Shake, allow to stand until clear, remove with sterile syringe and needle and inject.

The freshly prepared solution of Cytoxan may be administered intravenously, intramuscularly, intraperitoneally, intrapleurally, or directly into the tumor. The solution should be administered promptly after being made but is satisfactory for use for three hours after preparation.

If the patient is receiving a parenteral infusion, the Cytoxan solution may be injected into the rubber tubing if the solution is glucose or saline.

No thrombosis or thrombophlebitis has been reported from injections of Cytoxan. Extravasation of the drug into the subcutaneous tissues does not result in local reactions.

PRECAUTIONS: Cytoxan should not be given to any person with a severe leukopenia, thrombocytopenia, or bone marrow infiltrated with malignant cells. It may be given with suitable precautions to patients who have had recent x-ray treatment, recent treatment with a cytotoxic agent, a surgical procedure within 2-3 weeks, or debilitated patients.

AVAILABILITY: Cytoxan is available as follows:

Cytoxan for Injection, 100 mg., a sterile dry-filled vial containing 100 mg. cyclophosphamide and 45 mg. sodium chloride. Packaged, 12 vials per carton.

Cytoxan for Injection, 200 mg., a sterile dry-filled vial containing 200 mg. cyclophosphamide and 90 mg. sodium chloride. Packaged, 12 vials per carton.

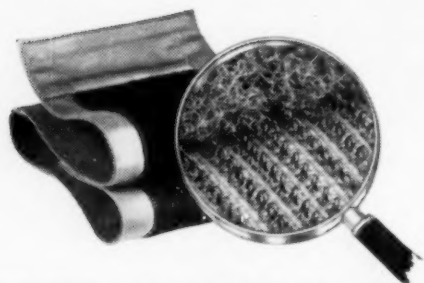
Cytoxan Tablets for oral administration, 50 mg., white, round tablets, flecked with blue for easy identification. Packaged, 100 tablets per bottle.

For a copy of the Cytoxan brochure, or other additional information on Cytoxan, communicate directly with the Medical Department (Section A), Mead Johnson Laboratories, Evansville 21, Indiana.



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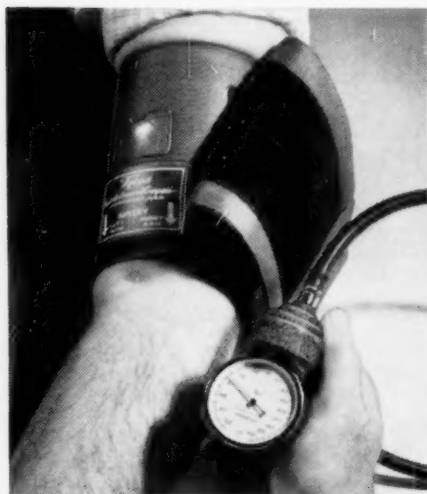


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The Journal of MEDICAL EDUCATION

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Presidential Address*

THOMAS H. HUNTER, M.D.†

School of Medicine, University of Virginia, Charlottesville, Va.

Now, according to my program, I think the next job I have is to deliver myself of a presidential address. Like most presidents embarking upon such a project, I feel inadequate to the task. I recognize that there are many wiser than I in this audience, but in this year of presidential election, I can hardly plead youth and innocence. I am older than either presidential candidate and, although I feel quite insecure, I shall do my best to rise to the occasion.

I have no data to present to you. I don't have a manuscript. Nevertheless, I assure you that I have given a great deal of thought to what I propose to say. Since I shall be voicing my own opinions and prejudices, the Association need take no official account of what I say. If I can needle a bit on a personal basis and raise some problems that I think I see, I shall have accomplished my mission.

First, I should like to address myself to the Teaching Institutes of this Association. I need not dwell upon the details of their organization. They started in 1953 with consideration of the teaching of the basic sciences, dealt with the medical student, his selection and ecology, and finished with two teaching institutes

concerned with clinical teaching. I believe it is fair to say that no program in medical education has had a greater impact than these teaching institutes. They have involved directly more than a thousand faculty members in the intellectual activities of this Association, medical school faculty members brought right into the operation of these teaching institutes as working participants, returning to their faculties and taking with them the work of the Association. The Institutes have provided a tremendous stimulus to our research division and grist for this mill that is invaluable.

The rest of my talk could be spent elaborating on the far-reaching influence of the Training Institutes. However, I would like to mention only two examples of specific outcome, one following the 1955 Teaching Institute and one following that in 1956. The first was concerned with pathology and related subjects. Up to that time the discipline of Genetics had been represented in only a handful of medical school curricula. There are only a handful of schools in which genetics is *not* represented at the present time. If one looks at the recipients of Nobel awards in the past few years, it is not difficult to document the fact that genetics is important on the scientific scene today. This was not so apparent in 1955, and I think the stimulus

* Delivered at opening session of Association of American Medical Colleges, Hollywood Beach, Florida, October 31, 1960.

† Dean, School of Medicine.

for this growth of genetics in medical schools came in large measure from the Teaching Institute of that year.

In the following year, 1956, when the institute was concerned with the admissions of students to medical school and their evaluation, the matters which came up for consideration were so pressing and seemed so obviously in need of follow-through, that the Continuing Group was started as a direct result under the aggressive and able leadership of Dr. Jack Caughey of Western Reserve. This group has met yearly ever since and has done great service to the cause of medical education in addressing itself to important problems of the student.

As you all know, the spark behind this series of Teaching Institutes just concluded with last year's institute came from George Berry, Dean of the Harvard Medical School. Those who have not worked on these planning committees can have no idea of the amount of time, the amount of energy, the amount of imagination and leadership that were provided by Dr. Berry in putting this show on the road. Having worked on many of these committees myself, I can say at first hand that Dr. Berry's contribution has been truly massive. I would like to pay a personal tribute to him for this contribution at this time.

Now, I do not mean to imply that the Teaching Institutes are over. They are taking a new tack. The next three Institutes, including the one which immediately follows this meeting, are to have a somewhat different orientation. Rather than concerning themselves with disciplines and the teaching of specific disciplines within the medical school curriculum, the next three will be concerned with broader aspects of the medical school and with the forces inside and outside the medical school which impinge on the teaching effort in one way or another. This year, for example, the in-

stitute is concerned with the impact of changing patterns of medical care upon the teaching and organization of the medical school. The one to follow will deal with medical research and the medical school; and the year after that the Institute will deal with the medical school and its relationship to the medical profession.

You can see that this is to be a different constellation from the preceding group of Institutes. I hope very much that these will approach the effectiveness of the series which Dr. Berry so ably led.

Now, I should like to embark upon another theme entirely, and wax somewhat philosophical, which is my bent, I am afraid. I feel that the main concern we all have as deans and as people responsible for the administration of medical education and education in general is with perspective. The outstanding feature of society in our time has been the inordinate rapidity and massiveness of change in so many directions going on all at once, and this matter of maintaining perspective becomes exceedingly difficult.

I am reminded of an accident, fortunately without any serious consequence, that happened to a very good friend of mine a few summers ago—Dr. Oliver Lowry, ex-dean of Washington University Medical School, with whom I had been vacationing in Florida. His family and my family had spent some time down here basking in the sun. And on the way back to St. Louis, his station wagon with his wife and five children, as well as himself in it, was struck by lightning. The lightning was conducted through the skin of the car and nobody was hurt, but it was quite an experience. I asked Ollie afterward what it was like. "Roughly," he said, "like being inside of a fire-cracker," which I thought a fairly graphic description!

Well, this is the way I feel about this

matter of trying to maintain some perspective at the present time, in the midst of the explosion, both sociological and scientific, which characterizes our society.

Perspective, as I see it, involves conservatism in the sense of preserving the good things from the past that can be made relevant to the future, but at the same time seeing into the future clearly enough to be able to foretell moves that need to be made, seeing into the future not in the light of anything past but in the light of the crystal ball, when it is very difficult to see which direction is up, what movement constitutes progress, and what movement is simply a Brownian movement. I will confess to having considerable concern about this aspect of things at this point in history myself. But let's examine a few areas in which we might attempt to gain some perspective.

One thing I believe is reasonably clear, and that is that the public is intimately concerned with medical care and medical research. There is a more and more insistent voice from every quarter, for more and better and less expensive medical care—with heart in it still, and there is a most insistent pressure for rapid solutions to the major problems as yet unsolved in medical science. I think these forces are clear. They are not to be denied under any circumstances, and they set the main pattern of our future development. *Pari passu*, it is obvious that expansion of our facilities to some degree not clearly measurable is urgently needed.

It is my own opinion that, despite our very best efforts, we shall not achieve the degree of expansion that has been projected as required over the next 10 or 15 years in order to maintain a stable patient-physician ratio. And this means to me, if I am right in this projection, that we are urgently in need of new

methods of providing patient care and of utilizing the time and energy of the physician more effectively. I hope that this will be one of the major questions to which the group in this year's Teaching Institute will address itself.

I also think that it is apparent that the individual private practice of medicine will not be the basic pattern of medical care in the future. To me, it simply does not make sense. I think we have to plan in the direction of devising more and varied group efforts of one sort or another. It is a matter of grave concern when our best graduates go out into the private practice of medicine these days only to find that they cannot bring to their patients the kind of medical care they feel is essential under these conditions of practice. We shall have to devise ways and means of using ancillary personnel more effectively. We must free the time of the physician for the things that are really important so that he can maintain the personal, compassionate, sensitive, individual approach to his patients which is, in my opinion, *not* tied to his operating as a solo practitioner.

In planning for the expansion of our educational facilities, we are, of course, concerned with how this should be done—by creating new schools or by expanding old ones, and, if new schools, how big, of what sort, what patterns? In this regard I should like now to discuss the question of size.

It is apparent to me that we cannot satisfy all the needs by the expansion of existing schools. There are varying opinions as to the magnitude of expansion that is wise, and I should like to discuss a few aspects of this perhaps from a reactionary, nostalgic point of view, nevertheless to bring some points into the open which may otherwise get lost in the shuffle.

There are those who feel that there is no inherent limit to the size of an

institution, specifically a medical center, provided one pays attention to quality of individuals involved, and to a proper ratio of the numbers of faculty to the numbers of students, and a balance in regard to the effort in teaching, research, and service. I do not share this opinion; I believe that size of itself must be considered. There are three central reasons for this belief.

The first is concerned with the broad area that might be called communications. By this I mean simply that, when a medical school class becomes so large that no one individual can be acquainted with all of the other individuals in the class, something has been lost. It is not cataclysmic; it isn't the end of everything; but something is lost.

Similarly, when a faculty becomes so large that one man doesn't know what is going on at the other end of the institution; when the holding of a real faculty meeting is impossible except in the football stadium by virtue of numbers, again something definitely has been lost. Thirdly, when the dean or the assistant dean in charge of students cannot know all the faculty and cannot know all the students, the same thing obtains. Inter-communication and a feeling of solidarity—an *esprit* of a certain sort—is much more difficult to maintain. I shall not enlarge upon size at the other end. It is perfectly obvious that in a medical school one needs a certain critical mass before things start clicking, and it is not economical to have a medical school too small.

My second reason has to do with the size of the medical center and the distribution of medical centers nationally. In this instance, I refer particularly to the following consideration. There is no doubt in the minds of anybody in this room that the presence of a university medical center does something very vital to the medical care in the geographical

area in which the teaching center is located. Parts of our country which are far removed from such centers are already in a suboptimal position from the point of view of providing the best in medical care. If my crystal ball isn't too cloudy, I see this kind of relationship becoming more, rather than less, important in the future, as I see various levels of referral of patients becoming more important. Furthermore, tied in with this is what I alluded to in regard to the economical use of physician time and energy. To me, all of this ties in together. It would be a great mistake from the point of view of the health care of the nation simply to expand the already existing facilities in medical education and not to plan actively for new schools in strategic places.

Lastly, in the consideration of size, there is the question of administration. This I find particularly fascinating. I cannot prove many of the points that I am going to make in this regard, but I can mention them for what they are worth. I refer you to Haldane's delightful little piece entitled, "On Being the Right Size."¹ This is a biological paper in which the disparity between the rates of growth of various parts of an organism and the importance of various aspects of size per se are brought out very graphically. Haldane points out that, if you drop a mouse down a 3000-foot mine shaft onto soft ground, he may be a little stunned at the bottom, but he comes to, shakes himself, and walks off. If you drop a rat, he is broken. You drop a man, and he is a mess. You drop a horse, and he splashes. The varying relationships between surface area, wind resistance, and mass in these organisms account for the differences.

Take another example Haldane cites,

¹J. B. S. Haldane, *Possible Worlds*. New York: Harper Bros., 1928.

Suppose you try to build a man, a human being, to scale, only 10 times taller. What would he be like? What would happen to a Paul Bunyan? The first thing would be that on trying to rise his femurs would fracture; if they simply grew proportionately to his size they would not be strong enough to hold his weight, since mass would increase as the cube, whereas femur cross section would increase only as the square. This incidentally is why a rhinoceros has short, stumpy, massive legs with huge short femurs.

I have a theory that one can liken administration within an educational institution (and I wouldn't limit this to medical schools) to the supporting structure of the skeleton. Administration and administrative activity, of all people concerned (not just deans alone) increases disproportionately with size. I cannot prove this theory; perhaps it merits study. It seems that, as our schools get bigger, more and more people, including the dean, spend more and more of their time on the machinery and less and less of their time on the guts of the matter—namely, academic concerns, scholarship and teaching.

I am unhappy that the time has long since passed when more than a handful of the university presidents can address their energies to matters of scholarship. The same now is true of deans of medical schools and deans of any other large schools and is becoming rapidly true of department heads. I was shocked and dismayed this year to hear that, at the meeting of the Professors of Medicine (some 65 members present, I am told), every single one indicated that he was no longer able to get into the laboratory and pursue research himself. The next step, of course, is division heads, and this is happening here and there, I am sure. We are rapidly approaching a time, I think, when nobody but assistant pro-

fessors can really do much in the way of scholarly work.

There are those who say this is unavoidable, that this is just modern society, that we have arrived at a time when all you can do is shake your head about it. But I am unwilling to settle for that. I feel that the one real limiting factor in our whole forward motion is creative thinking. The best minds should be free to concentrate on the things that they should be used for; we cannot do this simply by proliferating people at the lower levels and eliminating those who have achieved some maturity. I will say personally that I feel this very acutely, having myself made the mistake of becoming a dean before the age of 40!

Now, another point on another subject. The flow of funds coming our way at the moment and in the future is going to change our whole situation very, very rapidly. It already has, and the rate of change, I think, is going to be even greater in the immediate future. We are approaching a time when limitation of financial support will not be our major concern. There are a lot of details to be worked out, but the trend is apparent. Our real limitation will be, as it is to an extent now, manpower and people of talent and people with ideas.

Dr. Rene Dubois in the controversial October issue of *Harper's*, likened medicine to a mighty ocean liner with a defective compass and an absurdly small rudder. I agree in many respects with the picture that Dr. Dubois has drawn for us, except for one major part of his simile: I don't think we are monolithic in this country. Medicine and medical education are not one great big ocean liner going in any one direction. It is more like a fleet of speed boats, with variable rudders milling around, going off in various directions. Our basic problem is going to be deciding what we want to be. Each school is going to have to worry less

about finding the wherewithal; it will have to come to grips with the much more difficult problem of deciding what it wants to be, then setting about to become this. I would hope that our schools do not all decide the same thing. We must be much more imaginative in pursuing diversity advisedly in planning for the growth of our medical educational facilities and activities in the very near future. In diversity lies our great strength. The A.A.M.C. can help in this regard but cannot do the job. We can provide radar; not radar control, but radar communication for this fleet of speed boats, and perhaps a compass repair shop. I don't think the A.A.M.C. is going to steer an ocean liner, nor should it.

Now, one more bit of pontificating, and I shall sit down. What I am about to consider is, in my opinion, the most important, and I have saved it for last. I am not going to elaborate on it at any length. My only hope is to plant a series of needles and to start people who know much more about this problem than I do thinking about its solution. I am now speaking

about the position of medical education in the *world*, not just in this country. It is fair to say that, right in this room, at this point in time, we have one of the major assets of the free world. We must recognize this and devise much more imaginative ways of carrying out our responsibility as the center of gravity of medical education and modern medicine in the world today. The rate at which the needs for help from us are materializing is frightening. The ways in which to be helpful and not just do-gooders are not clear to me at the moment, or I would certainly put them forth. I am dismayed when I hear people in medical schools talking entirely about their responsibility at a state level or, at this point in time, concerning themselves almost entirely with their national problems and apparently really not appreciating the fact that what we do in the way of helping underdeveloped countries all over the world at all levels of medical education, probably in conjunction with a major government effort, may make the difference in which way the tide goes in the next few decades.

Medical Overseasmanship—Obligations, Opportunities, Operations*

ROBERT S. MORISON, M.D.†

The Rockefeller Foundation, New York, N. Y.

The participation of the American medical school in the nation's overseas peacetime effort has grown up like Topsy or possibly, as Sir John Robert Seeley said of the British Empire, in a fit of absence of mind. A mere trickle of foreign graduate students before the last war has grown into a flood that makes almost every seminar or clinical conference at worst an experiment in interlingua and at best a triumphant demonstration of medical science as the finest instrument yet devised for breaking down international barriers. If, as your President has suggested to me, our schools are not doing as good a job as they might, it is not for lack of good will on their part or for lack of an earnest wish to learn on the part of those who come here. What failures there may be stem rather from the usual American reluctance to look into the theoretical and logical structure of things and to rely, again like the British Empire, on an empirical muddling through. Since all of us are pretty well convinced that American medical education is the best in the world, what could be more natural than to assume that the best way of improving overseas medicine is to absorb as many graduate students and interns as possible into our system. Unfortunately the problem is not as simple as that. Much time and thought must be

spent before appropriate solutions are found.

OBLIGATIONS

Since time is short and thought a painful process, perhaps we should pause a moment to ask ourselves why we should bother. This is not, as a matter of fact, a trivial question. The effort to provide Western medicine to the underdeveloped or traditional cultures of the world is but part of the Western effort to meet the rising expectations of these emerging areas: There are those who seriously question the intellectual and moral basis of the whole enterprise. As thoughtful and moral a person as George Kennan argues that "great damage can be done by altering too rapidly the social and cultural structure of any society even where these alterations may be desirable in themselves. In many instances one would like to know how this economic progress is to be related to the staggering population growth with which it is associated. Finally, many of us in America have seen too much of the incidental effects of industrialization and urbanization to be convinced that these things are absolute answers to problems anywhere." Mr. Kennan goes on to "reject the suggestion that our generation in the West has some sort of a cosmic guilt or obligation vis-à-vis the underdeveloped parts of the world." The whole passage,¹ much too long to quote

* Presented at the 71st Annual Meeting of the Association, Hollywood Beach, Florida, 1960.

† Director for Medical and Natural Sciences.

¹ George F. Kennan, *Russia, the Atom and the West*, Chapter V. New York: Harper, 1958.

here, is well worth reading as a helpful corrective to uncritical missionaryism and panicky crash programs designed to counter the siren song of Russian propaganda scattering materialist blessings over an eagerly waiting world from an as yet entirely mythical horn of plenty.

Nevertheless, a hard fact remains. The emerging world *does* expect the Western world to continue teaching and helping it to achieve certain objectives. One need only quote the first political manifesto to appear in the Belgian Congo to show how academic are our own self-doubts about the values of Western civilization:

A new civilization is being born from Belgium's civilizing action in the Congo. It will be our own civilization. The principal elements of Western civilization are penetrating ever more deeply into the Congo. There is primary education for the masses, and an intellectual elite goes to the university. Science and modern technology are being mobilized against disease and want, and form the basis of a growing prosperity. The Christian religion teaches us the deeper meaning of life, the fundamental dignity of the human individual, and the brotherhood of all men.

But we have only gone halfway as yet. We want an all-round civilization. A growing number of Congolese wants to have more responsibility and initiative in the future. They want to incorporate in their national life other fundamental values of Western civilization: respect of the human individual and of his fundamental liberties, without racial distinction; the search for greater social justice; the right of peoples who have reached maturity to govern themselves; real democracy, based on the equality of all men, and the participation of the people in the government of the country.

Without validating Kennan's fears that we are too conscious of our own hypothetical guilt, we can at least acknowledge that we who have displayed the wares of Western civilization to our new customers have some sort of honest and reasonable obligation to see that they get the genuine article.

Perhaps the problem is easier for physicians than it is for diplomats, anthropologists, or philosophers, for did we not swear some 2,500 years ago to impart a knowledge of the art not only to "my own sons and those of my teachers but also to disciples bound by a stipulation and an oath to the law of medicine?" Where would American medicine be if our fathers had not been welcomed in the autopsy rooms of the Allgemeines Krankenhaus, the wards of the Salpêtrière, and the casualty rooms of Guy's and St. Thomas's? For this reason alone we should gladly and, if I may say so, Mr. Kennan, quite without guilt, keep the doors open at the MGH, the Presbyterian, and The Johns Hopkins.

Mr. Charles Malik, in an address entitled "Is it too late to win against communism?" has recently argued this question from a base which far transcends the obligations of a single profession. In his opinion "A civilization is doomed if it is not creatively conscious of something universal and human it can and must give. . . . The question is whether you honestly feel that you are not complete or happy so long as others are humanly incomplete."

Concern over past excesses of bigoted missionaries or rapacious conquistadores should not be allowed to degenerate into paralyzing self-doubts about the whole enterprise of Western civilization. The national and individual freedom for which so many emerging nations seem to be reaching eagerly has some of its roots in the experience and tradition of many of these peoples themselves. However, the central issues and the institutional structure for giving effect to such freedom have been worked out by a long debate and experimentation in the Western world where analysis, invention, and struggle gave the notion its modern form. Freedom would not even be an

issue in many parts of the world today unless the so-called imperialist powers had put it there and tutored the underdeveloped peoples in its usages.

It could be the greatest tragedy of all time if just at what should be its finest hour the West suddenly loses faith in all it has accomplished and allows the adolescent countries of the world to be led not forward into full and independent manhood but backward into the old slavery with a new name.

And while we are about it let's not get more than intelligently upset by Mr. Kennan's quite proper concern over the fact that improvement in communications, in methods of cultivation, and in improved public health practice will continue at least for a time to contribute to the explosive increase in the world's population. To withdraw the helping hand on this account would be like refusing to get dressed because we are forever condemned to put our pants on one leg at a time. The awkwardness of the procedure should not blind us to the happy fact that after all we do look quite presentable once they are on. Experience shows pretty well that once a people finds that it can control its death rate it begins to look around for ways to bring its birth rate into line. Perhaps the two considerations are not quite so closely linked as the legs of a pair of pants, but they are not entirely unrelated either.

Many of us believe that the best way for medicine to exploit the relationship is to concentrate on the development of sound programs of maternal and child health. The demonstration that it is not necessary to bear six children in order to raise two, fosters confidence in modern scientific medicine and open the minds of mothers and fathers to procedures for maintaining an ecological balance between the number of mouths and the amount of food to put into them.

The population problem is not simple, and it is important—perhaps the most important of our times. No one in his senses should try to belittle it. However, it is both unscientific and inhuman to attack it by retreating to the spurious security of high mortality rates.

OPPORTUNITIES

Once it is agreed that the nation and the West in general have an obligation, a duty, or simply a self-fulfilling urge to take part in the progress of the rest of the world, certain special opportunities present themselves almost automatically to the nation's medical schools.

In the first place, they will find that what they have to offer is particularly welcome. Of all the varied and often somewhat doubtful blessings the West can confer, better health is perhaps the most easily understood, the most immediately wanted, and the most firmly grasped. The instinct to live and to reproduce overrides all doubts about foreign intervention, the evils of urbanization, or the destruction of tribal value systems which frequently impede the progress of other elements in developmental schemes. The religious missionaries found this out a long time ago, and to this day many of the most successful missions are built around a hospital or clinic not infrequently presided over by a thoroughly secular physician.

Medicine, too, offers the opportunity of introducing into a new society a series of concepts or attitudes indispensable for the development of a modern socioeconomic system. Many of these concepts and attitudes are so familiar to us that we are hardly aware of them. My former chief, Dr. Alan Gregg, used to like to quote Sir Oliver Lodge to the effect that the last thing a fish could discover is water. Similarly, we are so surrounded by the idea that man can control nature, that loving one's neighbor is by and large

a good thing, that social organizations can be built on other than family lines, that we tend to think of them as part of the structure of any universe. The fact is, however, that nowhere save in Western Europe have these three elements been put together into a single weapon system for waging the battle against poverty, disease, and death. Each one of the essential elements may have cropped up from time to time in other cultures, but rarely has the effort been sustained and never anywhere else has the West's peculiar combination been attained. Thus many Oriental religions have talked about the importance of loving one's neighbor, but only rarely has the principle been extended to involve entire communities. East of the Arabian desert religious buildings largely take the form of temples for individual or family worship. The three great religions, which arose on the other side typically built large cathedrals, mosques, and synagogues to house the practice and symbolize the theory of community worship.

Similarly, bits and pieces of the idea that man can control nature are found throughout the world, perhaps most notably in the flood control and irrigation works of the great river civilizations of Asia. Astronomy, navigation, metallurgy, and ceramics were well developed in many non-Western civilizations; but only in the West, and there only since the 16th century, did a sustained, organized, and systematic scientific effort direct its curiosity to every nook and cranny of the natural world.

F. S. C. Northrop in his *Meeting of East and West* speculates that the Greek invention of theoretical physics led directly to the idea that man's social organization could be deduced from observable natural laws. This in turn is supposed to have led to the idea of contracts and constitutions for the better

ordering of economic and political affairs. However that may be, and there will certainly be those who wish to give a larger share of the credit to Judeo-Christian ideas of brotherhood than to theoretical physics, the record is clear that the constitutional governments of the West are quite different from the tribal regimes of primitive areas or the extended family authoritarianism of the Oriental despots.

But what does all this have to do with medicine? Simply that medicine by itself combines the three essential Western elements in a way which is easily understood and immediately welcomed by almost any population, however backward. The scientific side of medicine becomes a vehicle for demonstrating that ill health is not a matter of evil spirits or divine wrath but of poor food, bad water, promiscuous habits, and other subtle, but still rationally understandable, chains of events.

Another far-reaching lesson may be learned when a local population discovers that the doctor gives equal care and attention to all comers and expects his nurses and assistants to do likewise. In Africa and many parts of Asia even today, sympathetic relief of suffering is pretty well confined to the family or at best the tribe, with all others paying spot cash for every food tray, hypodermic injection, or urgent call for the bedpan.

And finally there is the task of putting science and the concept of Christian brotherhood together into community organization for the development of better water supplies, sanitation, and hospital care for the good of all.

No doubt the preceding description of opportunities for U.S. medical schools may strike some if not all of you as pretty far out, unduly altruistic, and probably downright impractical. Nevertheless it seems important for two rather different reasons to introduce the topic

of opportunities in this comprehensive, perhaps even philosophical way. In the first place, it emphasizes the size and scope of the opportunity which lies before medical education in underdeveloped areas. The other purpose of the presentation is to point out at once that we are not just talking about better ways of handling a few graduate students. Large opportunities require large efforts.

Perhaps it will relieve the strain somewhat if we close this discussion of opportunities by pointing to a concrete, immediately exploitable opportunity—the chance to do research on unfamiliar diseases and on familiar diseases in unfamiliar environments. Already the classical studies of tropical parasitism and the more recent analysis of the metabolic alterations in kwashiorkor provide examples of the first sort of thing. The studies of Davies on the incidence of malignant disease in Uganda, and by several groups on the epidemiology of cardiovascular diseases, demonstrate the promise of quantitative investigation of familiar diseases in unfamiliar settings.

OPERATIONS

Now let us ask ourselves about what I have called, for purposes of alliteration in the title of the paper, the *operations* necessary for exploiting our opportunities.

In the first place must be mentioned certain general principles. Of these the most important is the recognition that the job calls for sustained effort. Western civilization took maybe 5,000 years to get to its present state, Western medicine perhaps 2,500. The adaptation of Western methods to underdeveloped areas will of course take less, but it cannot be done overnight or in a decade, perhaps not even in a century, no matter what crash programs are undertaken by ICA, WHO, or a new Institute of International

Health. Any medical school that commits itself to a serious role in this effort should prepare itself for a program which will long outlast the lives of its present faculty. As will be discussed in more detail later, a primary requisite is at least a small nucleus of staff which gives its highest priority to problems of overseas medicine. Stable financing must be found and some sort of tenure arrangements devised for people willing to commit themselves to this effort.

Secondly, sustained effort must be given to defining the problem and to selecting the part or parts which can be most effectively dealt with by the facilities available in a given American medical school. It must be made clear at once that the health problems of underdeveloped countries cannot be solved merely by transferring American methods. Neither will it help much to focus attention on tropical medicine on the assumption that the major problems of underdeveloped areas can be defined in terms of ova and parasites. The ova and parasites are there all right, but they are incidental. The two things that make the practice of medicine in underdeveloped countries different from that in the U.S. are *poverty* and *ignorance*.

The prevailing poverty means among other things that almost everyone suffers from a lack of proper food and inadequate environmental sanitation. The ordinary patient is frankly and obviously *sick* more often than is usual in the U.S. The medical wards with their multitudes of lobar pneumonias, galloping consumptions, typhoid fevers, dysenteries, and exanthems would be much more familiar to Laennec and Pierre Louis than to Cecil and Loeb. And on the other side of the house lie the ruptured and crippled in equally staggering 19th century numbers.

Another corollary of the poverty thesis is the fact that all medicine except for

that available to a tiny aristocracy is and will be for the foreseeable future organized and paid for by the government. The government control of medicine, repugnant though it may be to those of us brought up under a different dispensation, carries with it certain advantages which should not be overlooked. For example, it makes it possible to work out over-all plans for the coordination of curative and preventive services and for organizing group practice to include a variety of medical specialties together with nurses, technicians, and other assistants. As is well known, all underdeveloped countries suffer from a grave shortage of personnel which cannot possibly be met before the end of the century. This situation offers a special challenge to administrative ingenuity to divide the medical task into parts that can be handled by specialized personnel with brief but carefully designed training. Conversely, the efforts of all concerned must be devoted to seeing that the qualified physician and fully trained nurse perform only those tasks for which their precious skills are indispensable. American medical education has relatively little experience with this sort of thing, but it will have to learn if it is to provide suitable training for those who return to work in quite a different environment.

Another medical consequence of the poverty of underdeveloped countries is something of a paradox, for it seems to be true that the poorer the country the richer are the rewards of private practice. This is probably a corollary of what according to Gunnar Myrdal "is a regular occurrence endowed almost with the dignity of an economic law that the poorer the country, the greater the difference between poor and rich."² So

it is that the always severely limited number of qualified physicians make an excellent living caring for the thin layer of feudal aristocracy and wealthy traders which exists in even the most backward of backward areas. Recruitment to government hospitals and health services, or to full-time teaching positions in medical schools is limited to the few dedicated souls willing to sacrifice the comfort of their families to the welfare of the community. One emphasizes the point in part to warn the American school which may be entering the overseas business for the first time that it is not enough to take a sympathetic attitude to any and all applicants from other areas. Perhaps 99 out of 100 will return to fat private practices involving the upper 1 per cent of the population. It is this painful fact that has led the private foundations and other agencies with experience in overseas work to restrict their fellowships to individuals who pledge themselves to return to full-time positions in educational institutions or the duly constituted health services.

The problem of poverty raises still another very difficult issue. It must be frankly recognized that for years to come many areas of the world simply cannot afford to have all the medical services which modern advances make possible. Already some countries are spending over half the national budget on health and education and are hard put to it to save the capital on which further progress critically depends. Somewhere along the line some harrassed official has to make some painful choices as to how to spend the limited health budget. It will not make his task any easier if his medical staff contains a large proportion of eager young men who have been trained in American clinics to devote their energies to the expensive niceties of open heart surgery or the time-consuming mysteries of the artificial kidney.

² Gunnar Myrdal, *An International Economy*, p. 133. New York: Harper, 1956.

The problem of *ignorance* may be discussed under three headings—the ignorance of the populations needing medical care, the relative ignorance of those who will come to us for advanced training, and our own abysmal ignorance of what to do to help them.

International courtesy, a democratic respect for the dignity of man, and again our own ignorance of conditions overseas all cooperate to gloss over the unhappy fact that backward people are, as a matter of fact, backward. It does no real good to pretend that a literacy figure of 10-40 per cent doesn't mean that the vast majority of a population knows nothing about the simplest means of promoting health and will have a difficult time learning. As a direct consequence, all health personnel who are being prepared for work in underdeveloped areas must be given much more instruction on how to tell mothers how to boil water, prepare formulae, and dispose of wastes than would be customary in an American clinic. Printed instructions and diet lists have little utility when nobody in the patient's family can read.

Perhaps a more immediate problem for the American medical school is the relative ignorance of the people who come to it from overseas for training. Most immediately obvious is a frequent lack of adequate facility in English. Here I believe the schools should become more judiciously hard-boiled than many of them are at present. In almost all countries facilities now exist for learning English, and it is cheaper and more efficient all around if the prospective traveling fellow is required to present evidence of satisfactory facility before he leaves home. Some latitude in defining satisfactory is permissible, since the research fellow in organic chemistry can function successfully with a far more rudimentary knowledge of the language

than that which must be required of a resident in psychiatry.

Deficiencies in technical training pose a more difficult problem, but here again it is worth while to spend a good deal of effort ensuring that a candidate has fully exploited the opportunities which may exist in his own country before accepting him for advanced training here. Even so, there will be many, many potentially excellent people who will lack sufficient training in basic science of one sort or another or whose clinical training followed a pattern so different from ours that they will feel completely at sea when called upon to perform the usual duties of American interns and residents. Here special brush-up or cram courses must be devised. Fortunately the school wishing to do this can find excellent models at places like Tulane, Cornell, and Michigan on which to base such efforts.

Thus at last we come to the grand problem of our own ignorance. All of us know far too little about the conditions in underdeveloped countries. We still know too little about how to select for training here those individuals who will profit most from the experience and, what is even more important, who will put what they learn to the best use when they get back.

We know even less and pay far too scanty attention to the little we do know about providing medical care on a mass basis. Even in our own country medical education has provided little leadership, and the profession as a whole has shown little concern for the quantitative aspects of medical care. The assumption seems to be that if our best teaching centers made sure that every tetralogy of Fallot is properly taken care of and that the most esoteric blood clotting error receives the appropriate plasma fraction, our medical graduates would see to it that the low back pains of all the Mrs. Joneses of this world would be properly looked after.

However, it hasn't turned out that way, as the recent thoughtful studies of several labor union groups, among others, have shown. No one, of course, wants to retreat from the ideals of excellence which have dominated American medical education ever since Flexner, that extraordinary layman, pointed out our deficiencies. But a single-minded pursuit of quality is not free from the contradictions that bedevil all single-mindedness. What a paradox it is, for example, that just as we are arming ourselves to improve medical education in underdeveloped areas we wake up to find ourselves relying on the products of these very same schools to staff the nonteaching hospitals of our own great metropolitan areas.

There is, of course, a sense in which American medicine and American medical education may be said to lead the world. However, what are we really prepared to tell the prospective minister of health of the Congo about how to provide a balanced set of curative and preventive services to the largest number of people with the least sacrifice of quality? Practically nothing. And we will have to be continually giving the same dusty answer until we recognize that the question deserves the same high-powered study, the same sort of generous pioneering, the same prestige and status for the investigator as we now provide to unwind the twisting secrets of DNA.

Certainly these problems of quantity deserve study in the U. S. itself. However, for a variety of reasons too complicated to go into here, whatever solutions may be worked out in the U. S. are unlikely to be relevant to underdeveloped countries. The problems of the latter must be studied *in situ*. If we are honestly interested in helping (and in spite of our ignorance we really do have a lot that is worth bringing to bear), we will have to dedicate a substantial part

of our financial resources and our much more precious personnel to sustained continuous study and teaching abroad.

People have laughed for years at the old saw that an expert is an ordinary guy away from home, but much too much of our national policy continues to be based on this funny and phony proposition. It is flattering the first time one receives an invitation to fly over to Country X and advise the authorities on the construction of a medical school and teaching hospital appropriate to local needs. However, the more one learns about the local needs—and the local resources—the more embarrassed one becomes by such invitations. Unless, of course, one has that peculiar combination of stupidity and culture-bound gall which resulted in the advice to build a fully air-conditioned 800-bed skyscraper hospital at an altitude where, however tropical the latitude, the ambient temperature seldom rises above 60° F.

It is not entirely fair to lay the blame for this sort of thing on the obvious ineptitudes of individuals and the underdeveloped policies of our government agencies. The trouble lies deeper in two prevailing assumptions about the nature of the problem: first is the natural notion that all that is needed to develop another country is to transfer patterns of activity which have been developed here; the second is that relatively ordinary people are capable of doing it. It cannot be too often emphasized that it is no ordinary task to accomplish in 40 years what a small, very special part of the world accomplished in 4,000. There is no really obvious reason to suppose that anybody who would make a good associate professor or even department head in any U. S. medical school is just the man to devise the right pattern of medical education for a country that has never had any. Only people with an unusual combination of originality, creativeness,

flexibility, energy, and tact will do. England was in a way fortunate that the foundations of her empire were laid at a time when living conditions at home were sufficiently unattractive to push such men as Cornwallis, Elphinstone, Macaulay, and a host of others into overseas service. When it came time to attack the medical problems the Sir Patrick Mansons and Ronald Rosses stepped forward.

At present, conditions in most advanced countries are so comfortable, the spirit of adventure has so greatly declined, and the missionary spirit has become so unfashionable that it is difficult to recruit the best people for foreign service.

The problem is perhaps particularly acute in medicine where special additional factors are at play. What might be called the value system of the microculture of our medical schools seems to become ever more narrowly focused on the production of a certain type of biological research. Promotion, prestige, and pay—all are highly correlated with the ability to write papers in molecular biology and related disciplines.

Now I should perhaps make it clear that I fully share the general enthusiasm for these recent developments. Molecular biology is just brimming over with intellectual challenge, esthetic elegance, and practical promise. I would in fact like nothing better in this life than to be a molecular biologist myself.

However, there are other things to life than its molecular base. As a matter of fact, the ability of man to survive as a species is just as dependent on his capacity to develop appropriate interactions with other men as it is on the integrity of his DNA. Indeed the very integrity of the DNA itself depends on achieving planetary agreement on the use of radiant energy as an instrument of policy.

We can hardly expect to have mutuality of understanding in the world without at least approaching equality of condition, and medicine and science are generally the key instruments for improving the condition of the presently depressed peoples.

All this is clear enough in abstract terms. Why then are we so slow about working out the concrete expression of these ideas in our overseas effort? Specifically, why can't we provide stable jobs and appropriate opportunities to achieve prestige and promotion to men willing to dedicate themselves to the development of medicine, education, and research in the emerging areas?

Somehow or other this country must establish a career service for the development of underdeveloped countries. Ultimately, it should include all the relevant disciplines and technologies, but we here are concerned with medicine and public health. Several administrative and organizational frameworks suggest themselves, any one or all of which might work out to advantage if the right sort of men and women can be attracted to them. Without the right sort of people no one of them stands a chance.

This is not the place to discuss the organizational problems involved, but it is the place to emphasize the need for the right sort of personnel. Most of us here have a primary responsibility for training the next generation of medical students to meet the responsibilities that will be heaped upon them during the remaining years of this extraordinary century.

What then can the individual medical school do to prepare its students for their international as well as for their national responsibilities?

First, it can demonstrate to its students that it takes the problem of overseas development seriously. At the very least it can demonstrate a greater inter-

est in some of what I have called the quantity problems of medicine, both here at home and overseas.

A maximum effort would include the taking of responsibility for the development of a medical school abroad through some such mechanism as an ICA contract. This should be done only if the school is prepared to assign a significant proportion of its most stimulating teachers, its most creative investigators, its most resourceful administrators to the task. The over-all attitude should be primarily one of learning what the problems are and of inventing ways to solve them. The mere teaching of known techniques, important though it is, should be a secondary objective.

At this point it is worth emphasizing again that in most underdeveloped countries the government provides and controls both education and the health services to a much greater degree than is usual here. Whatever the disadvantages of this pattern, it does offer an unusual opportunity to develop medical education and research in close contact with the health needs of an entire community. A proper concern for the elegancies of medicine as seen in the teaching hospital can thus be balanced and enlarged by an equally intense concern for the less dramatic, but perhaps more pervasive, problems to be coped with by the surrounding health centers. The overwhelming pressure on the admitting ward, so characteristic of underdeveloped countries, acts as a stimulus to both faculty and students to learn more about what to do to help people from becoming so ill in such large numbers.

Is it too much to hope that in such a setting an imaginative group of American physicians in cooperation with a dedicated local faculty can work out a pattern of education which will resolve the long-standing feud between public health and private medicine which has done so much harm to so many innocent bystanders?

Schools unable to take on so great an over-all job can still help by encouraging outstanding faculty members to accept overseas assignments with a firm agreement to take them back at an appropriate academic level when the task is completed.

More information about other cultures can be provided to medical students at appropriate places in the curriculum, or by stimulating the formation of extra-curricular discussion groups. Some of the new experimental programs which combine the college and medical school years into one coherent experience may provide especially attractive opportunities for this sort of thing. Summer vacations can be expended to acquaint students with the actual conditions in other countries.

In our present state of inexperience it is unwise to do more than throw out a few suggestions in regard to detailed programs. Much experiment will be needed before any given school can arrive at the pattern which best suits its own sense of responsibility and the pattern of local facilities. All one wishes to do at this time is to emphasize the growing importance of the problem, the moral and intellectual validity of making a serious effort to solve it, and the depth of the satisfactions that await those who try.

The Doctor's Responsibility in a Changing World*

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I am deeply grateful for the invitation to address this annual meeting of the Association of American Medical Colleges. The last time I was so privileged was during the Korean conflict—as Chairman of the National Committee on Selective Service for Physicians and Dentists. We had many problems then which now have been solved, but today we face new and even more serious and perplexing ones than those of a decade ago.

I come before you distinguished educators with a varied background of experience . . . 15 years in the practice of medicine with clinical teaching on the side; 3½ years with the Army Air Force Medical Service, when it fell my lot through a series of circumstances to establish and direct the new Air Force Convalescent-Rehabilitation Training Program. This changed my life both professionally and personally, for I became deeply convinced that much could be done for our disabled and chronically ill that I at least as a physician had not done. So I left the practice of medicine to teach at New York University and to write about a new philosophy of medical responsibility. This concept we now call the "third phase of medicine," the first obviously being prevention; the second, definitive care; and the third, that hiatus for the disabled and chronically ill be-

tween bed and job or, at least, independent living.

This concept of responsibility is now fairly well accepted. The doctor, as captain of a therapeutic team, must see that the physical, emotional, social, and vocational needs of his patients are met, since unless they are, he has not finished his job.

In an attempt to accelerate both the professional and public understanding of this philosophy and program, every Sunday for the past 15 years I have written a column in *The New York Times* on some topic in the field of social medicine. The horizons have been far-flung and often difficult, not only to interpret but to understand fully. I should like to share with you some of my observations, wonderings, fears, and failure from this multi-vantage point.

First I should like to comment on the shortage of physicians, since it is generally acknowledged now that we have been confronted in this nation with a serious shortage of physicians for the last 2 decades at least, and that the shortage is alarming and increasing.

Early in 1951, the Health Resources Advisory Committee of the National Security Resources Board (which later became the Office of Defense Mobilization) reported its evaluation of the problem to the annual Congress on Medical Education and Licensure of the American Medical Association. At that time there were 178,000 active physicians.

The committee, of which I was chairman, estimated that to maintain the 1949 civilian ratio of 850 persons per physi-

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cian would require 186,300 active physicians by 1954, when the population was expected to reach 160,000,000. We concluded in 1961 that the nation would need 22,000 physicians over and above those in sight for the year 1954, to meet the needs of civilian practice, teaching, research, public health, and the Armed Forces.

It was an unhappy meeting, and the Committee was roundly criticized, to put it mildly. Now in retrospect, nearly 10 years later I think our real error was on the side of conservatism, for we are all profoundly disturbed not only about the physician shortage but the lack of qualified applicants to our medical schools.

All of us here are familiar with the report of the Surgeon General's Consultant Group on Medical Education issued a year ago. This report told us that, as compared with a ratio of 134.9 doctors of medicine for each 100,000 Americans in 1949, the ratio in 1959 was 132.7. During this period, however, the percentage of physicians engaged in practice has declined, and the percentage engaged in private practice has declined even more sharply.

To maintain even this decreasing ratio of physicians per population we rely more and more on foreign graduates. In 1953 about 17 per cent of the physicians who entered practice were educated in schools outside the United States. The Surgeon General's Committee warned us that our present graduating classes of 7,400 must be increased by from 3,600 to 11,000 graduates each year by 1975, if we are to maintain even our present physician-population ratios.

To me there is at least one bright spot in the future. In 1951 when the Health Resources Advisory Committee gave its report to which I previously referred, the American Medical Association categorically denied there was a shortage of

physicians in the United States, based primarily on a statistical study of regionalization and trade areas. However, time and experience have shown that the need for physicians cannot be well calculated by such a yardstick. This attitude at least has changed a bit. Earlier this month as a medical writer I received a letter from the American Medical Association concerning its new recruitment program. Let me read the first sentence: "Dear Sir: One of the major concerns of the medical profession today is the possibility of a future shortage of physicians."

Equally alarming to all of us concerned with medical education is the striking decrease in the number of applicants to our medical schools. Since 1956, the number of applicants has dropped steadily from 15,917 to 14,951. In 1947, nearly 7 per cent of all college graduates made applications to medical schools, as compared with but 4 per cent in 1958.

We all recognize one of the complicating factors in this problem: competition of medicine with industry which subsidizes and gets the young scientists it must have in order to fill its needs not only in production but research.

Over the last few years there has been a sharp increase in the total number of persons receiving the degree doctor of philosophy or its equivalent. The proportion of such persons in the biological sciences, however, has grown smaller in comparison to the increasing percentages in the physical sciences, arts, social sciences, humanities, education, and other fields.

However, I wonder if this competition is the whole answer. Personally I do not think so. The reasons go back a long way . . . to the sad era at the turn of the century, the era of diploma mills, a plethora of medical schools, poor teaching, and all the factors of this era which we know all too well. Then came the

famous Flexner report and a new era in medical teaching, with ever increasing emphasis on the basic sciences. This development was good, but I believe that possibly now the pendulum has swung too far.

With an ever-increasing emphasis on science and with the avalanche of new knowledge, possibly in our eagerness for scientific perfection we have forgotten what I believe to be the basic mission of medical schools—to teach doctors to treat patients . . . not livers or spleens or hearts or joints but people—sick people, old people, crippled people, anxious people, disturbed people; all are the basic problems of the medical practitioner.

A physician may be most highly trained and skilled in the field of enzyme chemistry, physiology, biophysics, or any of the basic sciences with their new and challenging vistas for research, but this does not necessarily make such an individual a clinician. Intricate diagnosis and the translation of clinical findings into therapeutic application, using all the fruits of research, also require special skills. It takes longer to develop a mature clinician than to learn some of the specific techniques in pure science.

In therapeutic application, except in the few instances of specifics, one has to take into consideration not only the body, but the mind, spirit, and environment of the individual. We all know the clinician must be a combination of both scientist and artist. These skills are often very difficult to find in one individual.

A professor of medicine must be a rare combination. In the past we may have asked too much of our teachers. Even with the danger of further dichotomizing the art and the science, possibly we should consider the appointment of Professor of Medicine and Professor of Research Medicine, each skilled in his

particular field, but working together through the technique of comprehensive clinics to complement and supplement each other's knowledge, and thus to meet the total needs of the patient. The Professor of Medicine is only an example. The principle applies generally.

Many years ago, while serving as Chairman of the Intern Selection Committee for a voluntary hospital, my colleagues and I were surprised and impressed by the fact that often the top members of the graduating class did not make the best house officers. Many of these found their forte in research and teaching. The "middle of the class" boys were the ones who, in our experience, were most interested in and gave the best patient service.

Of course there were exceptions, and when the brilliant student also had the art of human relationship, that was the epitome of quality service.

There may even be some students who have had great difficulty with biochemistry and physics, but who have shown unusual aptitude, interest, and performance records in the social sciences, psychology, and the humanities, who might well make excellent practitioners of medicine. Some may have a particular interest in the aged and chronically ill, who are ever increasing in numbers and who require not only technical skill, but dedication, devotion, and extreme patience.

Possibly, in our recruitment programs, when we describe careers in medicine, we stress too much the scientific and not enough the human and spiritual dividends . . . the magnificent, indefinable, thrilling relationship between physician and patient.

I remember the wise words of a professor of medicine, when his son asked him, "Dad, should I study medicine?" His answer was, "Not if you can keep from it."

I, too, feel there is a sort of a spiritual call about dedicating your life to medicine, whatever facet you choose. Without this we cannot expect to keep the place in the sun we have occupied in the past . . . the doctor as physician, spiritual confidant, teacher, counsellor, friend. I am sure there are many young men and women today in our country who feel this call to service and who would make magnificent dedicated practitioners of medicine, even if they have an occasional "C" or even a rare "D" in one of the basic sciences. Spirit, as well as scientific aptitudes and interests, must be considered in our selection of young people to go into lives of professional dedication.

Another source of qualified applicants for medicine is the disabled. In the past we have often thoughtlessly barred from the practice of medicine certain individuals who, as far as the practice of that profession is concerned, are in fact not disabled at all. At the present time I know of two traumatic quadriplegics in their third year of medicine, who will make excellent physicians entirely eligible for the practice of psychiatry, rehabilitation, roentgenology, and possibly several other specialties. At the Institute of Physical Medicine and Rehabilitation we have trained ten paraplegic physicians, who are carrying full-time clinical loads and who are doing splendid work. They teach and practice not only by precept but by example.

I was particularly impressed by the remarks of Dr. Frank Stanton at the dedication of the Stanford University Medical Center. In discussing the Stanford plan for education for medicine, he said: "Throughout the three years every effort is directed toward making the student aware of the patient as a person rather than as a defective organ system demanding some particular therapeutic approach. The influence of the total environment, including the influence of the

physician himself, on the solution of a clinical problem is stressed."

Please don't misunderstand me. I deeply believe in the honors program. I rejoice as you do when a new talented research worker is created or a new young teacher inspired and dedicated; but I rejoice, too, when young physicians say their great interest in life is to treat people—sick people.

Our research programs have grown unbelievably over the past decade; you know the figures well, probably better than I do. In 1940, medical research expenditures totaled about 45 million dollars. This year, such expenditures, or as I choose to call them, "investments," will reach about 600 million. I am among those who predict and hope that by 1970 this investment will reach 2 billion dollars annually, not only for basic research as we presently think of it, but for social, environmental, and clinical research as well. If we can develop the scientific manpower to use it, the money will come.

You know better than anyone else the sad financial plight of our medical schools today. In 1941 the basic operating expenses, exclusive of grant-supported research, of all medical schools in the United States were 27.8 million dollars; in 1948, \$53.5 million; and in 1958, \$176.3 million. During this same period grant-supported research in our medical schools went from 3.8 million dollars in 1941 to \$17.1 million in 1948 and to \$87.5 million in 1958.

Without the support of research grants—even if the overhead is too low—let us be honest, our medical schools simply could not function. And many of our research workers also contribute greatly to teaching, administration, and some even to patient care.

The leaders in medical education have done yeoman's work in continuing to increase the quality and to strengthen med-

ical education against almost insurmountable odds. Despite this we simply are not training sufficient physicians, and we are almost completely neglecting programs of continuing postgraduate training, so necessary for the practicing physician.

Deficits in medical schools today are staggering and mounting. You in this Association have sought for years to get support from the Congress for teaching facilities. You have received help for research facilities, but that ugly word—teaching—somehow just does not seem to have appeal. The present situation, as you well know, is not only serious but borders on the catastrophic.

I personally believe that the only hope for survival, not to mention growth, is Federal aid to medical education. We have readily and avidly accepted government support for research—\$600,000,000 came in last year through the back door. Yet many in medicine say piously that we must not take such help honestly and directly through the front door for teaching. It is so obvious that teaching and research go hand-in-hand. They can no more be divided than the soma and the psyche. I am sure that most of you feel the same way.

To have advocated direct Federal aid to medical education would have been a bold statement a few months ago. However, both presidential candidates supported broad programs of fellowships for medical students and stressed the need for Federal grants for the construction and modernization of medical, dental, and public health schools.

In answer to the question, "Has the time arrived for some Federal support of basic operations within our medical schools?" Dr. Lowell Coggeshall has said, "If we are realistic, we must recognize, in principle at least, it arrived some time ago." Dean Thomas Turner of Johns Hopkins has said, "It is not a question of whether or not we'll have Federal aid.

The answer to that is yes. It is a question of how the aid will be given."

If our standards of high quality are to be maintained and our load increased to meet the ever-increasing need, Federal aid is imperative. Proper safeguards to academic freedom can be readily established and maintained. The experience of Federal aid to our land-grant agricultural colleges for more than a century has demonstrated this.

Declaring for and doing, however, are two different things. If we believe in Federal aid to medical education and we need Federal aid to medical education, what can we do? How can we get such aid? It can only be gotten when people understand. The Congress, the servant of the people, will act if the people so say. They have spoken for increased support in the research field, and the Congress has given most substantial increases every year for the past 7, over the recommendations of the Administration and the Bureau of the Budget. The people will speak even more emphatically on the basic needs of medical education, once they know the problem and recognize the need. This public education program should emphasize the lag between the research laboratory and the patient's bedside. It is not enough to discover. Obviously the application of knowledge is just as important.

One hopeful step recently taken and gaining in popularity in professional circles is the increasing emphasis on international medical research. All of us here know well the internationality of medicine. Osler said this nicely when he stated, "Medicine knows not nor has ever known international boundaries." It has been heartening, especially in the last 2 years, to see increased understanding in our government of the importance of international research. Federal support of international research this year is about \$15,000,000—almost double that

of last year. The Eighty-Eighth Congress passed the "Health for Peace" bill sponsored by the great mentor of health in the United States, Senator Lister Hill.

Under this program the national currencies of other nations, known popularly as "counterpart" funds, are available to support medical, health, and rehabilitation research. These are funds which have accrued to the United States as the result of the sales of surplus agricultural commodities and must be spent in the nation from which they were derived. Approximately \$5,000,000 of these funds have been appropriated for the current fiscal year, but there are billions of such funds throughout the world which can be used for research.

We in medicine have a unique responsibility in this world that is so technologically precocious and yet spiritually adolescent, since we can speak a common language. We can travel any place in the world and not be barred by color, creed, or curtain. Though the mother tongues and dialects are different and not understandable, all of us understand the lan-

guage of medicine. This is a magnificent opportunity and also an almost overwhelming responsibility.

We have the strongest weapon in the world today to combat poverty, disease, and hopefully to have a fundamental role in making Arnold Toynbee's prophesy of a decade ago a reality today; he said:

Can we guess what the outstanding feature of our twentieth century will appear to be in the perspective of 300 years? No doubt we shall not all guess alike. Some of us will guess that the present age will be looked back upon as the age of scientific discovery. Others will expect to see it branded as the age in which Fascist and Communist apostates from a Christian civilization harnessed science to the service of a new barbarism. My own guess is that our age will be remembered chiefly neither for its horrifying crimes nor for its astonishing inventions, but for its having been the first age since the dawn of civilization, some five or six thousand years back, in which people dared to think it practicable to make the benefits of civilization available for the whole human race.¹

¹ (Arnold Toynbee, "Not the Age of Atoms but of Welfare for All." New York: *The New York Times Magazine*, October 21, 1951.)

A Summer at Dr. Schweitzer's Hospital Smith, Kline, and French Foreign Fellowship Report *

EUGENE SCHOENFELD†

Dr. Schweitzer's Hospital, Lambarene, Gabon, Equatorial, Africa

Dr. Schweitzer's Hospital is located almost directly on the Equator 150 miles from the West Coast of Africa in the newly independent Republic of Gabon.

It sprawls through the jungle along the banks of the Ogowe River 2 miles from the village of Lambarene.

On an overcast afternoon, early in June, 1960, I was aboard a two-motored aircraft bound for this most famous of all tropical hospitals. The closely bunched green treetops obscuring the forest floor grew larger, and when it seemed as if we would land in their midst, a clearing appeared. Suddenly we were jostling along the dirt runway throwing up great clouds of dust. The plane taxied to a stop before a small brown building where Madame Rhena Eckert, daughter of Dr. Schweitzer, greeted me as I stepped from the plane.

A Land Rover drove us down a bumpy road past half-dressed Africans who looked curiously at the passengers and waved to Madame Eckert. In a few minutes we arrived at the river bank where a hospital *piroque* and four natives awaited us. Each shook my hand warmly as I climbed into the boat. On closer examination, I noticed the finger deformities of Hansen's disease.

The men paddled the flat-bottomed boat upstream keeping it always close to the shore away from the strong current in mid-river. Tangled branches and roots

exposed by the crumbling bank jutted out over the water. We moved among half-sunken logs and small whirlpools while the men chanted a native song.¹

After an hour the river curved, bringing the hospital suddenly into view. Small gray wooden buildings in the midst of thick brush seemed to cling to their places against the surrounding jungle.

As the boat approached the shore, I saw a figure dressed completely in white waiting at the landing. She was Mlle. Mathilde Kottman, a stately gray-haired woman who has worked at the hospital for over 36 years. We exchanged greetings and walked up a steep path to a large wooden building known as the *Pharmacie* or Dispensary. Inside, at the opposite end of a crowded room was "le grand docteur" bent over an ancient writing desk.

Even at the age of 85 Dr. Schweitzer has the appearance of great physical strength. His huge hands and forearms rested on the desk top. He wore a wrinkled white shirt, faded patched gray work pants, and well worn black shoes.

It was established that my duties would be largely of my own choosing and flexible enough to permit my learning as much as possible about the operation of the hospital and care of its patients.

THE HOSPITAL

The *Pharmacie* is the heart of the hospital. It contains the outpatient clinic,

¹ Until 1951 the hospital was accessible only by a 3-day boat trip up the twisting, often dangerous Ogowe River.

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* Abridged for *The Journal of Medical Education*.

operating room, pharmacy, laboratory, delivery room, nursery, x-ray room, hospital records, and dentistry. During the day it is alive with noise from children and adults, workmen breaking rocks beneath the building for use in construction, nurses scurrying to and fro, roosters crowing outside, the braying of goats and sheep who enjoy the activity inside and rest near Dr. Schweitzer's desk, and occasional yelps when doctors step unsuspectingly on dogs, fond of sleeping on wooden stairs within the *Pharmacie*.

Sometimes nurses, exasperated after stepping in a puddle left by one of the animals, try to shoo them out of the building. On one such occasion I observed Dr. Schweitzer say sadly to Anita, his favorite sheep, "they just do not understand we are not in a Swiss hospital."

Even on the brightest days the *Pharmacie* is dim within due to the soot-darkened walls. When bright light is essential battery-powered lamps are used.

There is no running water at the hospital; it must be carried up from the river or from a pump 100 yards from the *Pharmacie*. Electricity is provided only for the venerable x-ray machine and for the operating room when surgery is performed 3 mornings a week.

On the main hospital street outside, African *Infirmes* clang bells calling patients for medicaments. Waiting in the shade are old men with filariasis, young mothers casually nursing their babies, children with yaws, men with great scrotal hernias.

Leading from the main hospital street are paths and great concrete steps to the twelve cottages or *Cases*. A typical cottage is Case Galoa, named after one of the local tribes. Perhaps 80 feet long and 40 feet wide, it is constructed of wood with a corrugated iron roof. Within are two great wooden decks, with ladders

providing access to the upper level. Patients bring their own mats, bed clothing, and mosquito nets. No sheets or mattresses are available save for exceptional cases.

On the dirt floor beneath the lower deck chickens and ducks hunt for food scraps. It was most disconcerting while examining a patient to have a rooster pecking at my shoelaces.

In and around buildings like Case Galoa live 350 patients and at least an equal number of family members who prepare meals and provide routine nursing care for the patients. The African customs are left undisturbed as far as is possible, but efforts are made to separate various tribes who 60 years ago reduced each other's numbers by practicing cannibalism—hence, the designation of cottages by tribal names as Case Galoa and Case Fang.

At night scores of cooking fires send smoke drifting lazily over the Ogowe.

A quarter of a mile of primitive jungle separates the main hospital from the leper village where live 180 lepers and their families. The new leper village was constructed in 1954 by Dr. Schweitzer and the lepers with money received from his Nobel Peace Prize award.

Dr. Takahashi and four *Infirmes*, all lepers, attend to the medical needs of the *Leperdorf*.

Sanitary problems, naturally, are great with this heavy population concentration. One five-place privy is available for the main hospital patients. No such facility is furnished for the lepers who use the jungle and nearby river for waste disposal. Thus, the Ogowe serves as water supply, bath tub, and sewer.

Parasitic infestation is almost universal in the Gabon, as is malaria. Other common diseases are tuberculosis elephantiasis, yaws, and sleeping sickness.

The solution to most of these medical problems would require a large-scale

public health program including long-term anti-malarial therapy and health education. No such program is forthcoming or contemplated. Treating ascariasis or malaria at the hospital thus seems rather futile because of the knowledge of certain reinfection.

THE STAFF

Five doctors from Austria, Switzerland, Czechoslovakia, and Japan care for 500 patients. They work under what seem impossible conditions—no oxygen, running water, or electricity. Notes and laboratory data are written on the backs of old envelopes and medicine wrappers.

Assisting the doctors are seven nurses from Switzerland, Holland, and Germany. Their hours are the longest, since there is no regular night staff.

Dr. Schweitzer's daily schedule would exhaust most men 50 years younger than he. He arises at 6:30 in the morning and usually practices on the piano before breakfast. Many mornings I stood outside his window with the antelopes for company while the music of Bach or Franck drifted through the screens to mingle with the jungle noises.

The Doctor each day directs work to be done in the garden, on the road or in new construction where he often helps carry materials to the building site. I have seen him at the end of a long cable helping pull down a half-sawed-through palm tree.

He is to be found in all parts of the hospital, slightly stooped now with age, but still vigorous and alert. There is no question but that he is in command at the hospital. A reasonable man, he often agrees to changes suggested by his staff, but no changes are made without his authorization.

Long after most of the hospital sleeps, Dr. Schweitzer works over unfinished books and hospital matters. A leader in the fight to ban nuclear weapons testing,

he corresponds actively with many world figures holding similar views.

Assisted by Mlles. Ali Silver and Mathilde Kottman, he reviews the day's activities, orders supplies, and replies to the ever-increasing stream of correspondence. Only at midnight is his kerosene lamp extinguished.

EXPERIENCES

The operating room is adequately equipped, and within the limitations of the building strict sterile technique is followed. Screens comprise two sides of the room, permitting constant air circulation and a fine view of goats or ducks on paths a few feet away.

Because of the equatorial heat elective surgery is performed in the mornings. During the hot season one nurse or Infirmer must wipe perspiration from the surgeon's brow, lest it fall into the operative field. Flies and mosquitos are a problem as well, since no insecticides are used at the hospital.

The most common operations are herniorrhaphies and plastic repair for elephantiasis. Two tables 5 feet apart are utilized at the same time. One patient receives ether and the other a local anesthetic. When emergency surgery was performed at night it was necessary for someone to stand by with flashlight in hand should the generator motor fail. Then there was a frantic dash to the motor house while surgery continued under lamp light.

On one occasion a young woman was found to have a tubal pregnancy with rupture. With no blood bank or available donors, 1,000 cc. of blood was scooped from the peritoneal cavity, filtered, and given intravenously. The patient had an uneventful recovery.

Following surgery, the patient is carried from the *Pharmacie* across the street to Case Bouka. Surprisingly

enough, the infection rate is comparatively low.

The hospital is in many respects an outpatient clinic with an adjoining village. Patients who do not require hospitalization in the usual sense must nevertheless remain if their homes are distant and follow-up treatment is required. Natives come for treatment from all parts of the Gabon, arriving in their tiny dugouts and carrying all their worldly possessions on their heads.

Besides unusual afflictions such as gorilla bites, many cases of a traumatic nature are seen resulting from the lumber trade, chief industry of the region.² Since almost all Gabonese already suffer from anemia due to poor nutrition and parasitosis, many blood transfusions are administered.

Tests are made for Anti-A, Anti-B, and Anti-D. Major and minor cross matches are not made but several drops of donor and recipient blood are mixed and observed microscopically for agglutination. I was at first startled to find microfilariae wriggling in the field. Usually these were *Acanthocheilonema perstans*, but often loa-loa were seen. Finding loa-loa or malarial parasites in a donor's blood was not a contraindication to administration, since it was felt most of the natives have both diseases; nor were agglutination tests done to rule out lues.

Electricity is available for a small centrifuge and microscope lamp only on operating days. Usually it is necessary for an African to operate a hand-powered centrifuge.

For 6 months of the year Madame Eckert heads the tiny laboratory. The hospital physicians must do their own laboratory work when Madame Eckert is

in Switzerland with her family. Biopsy material is sent to France for evaluation.

Several afternoons each week, I worked in the leper village. Allain, a 24-year-old Infirmee, whose deformed fingers hindered him little, taught me the method of microscopic diagnosis of Hansen's disease. Scrapings taken from nasal septum, ear lobe, and body lesions were pressed upon slides and stained by the Ziel-Nielson method. On microscopic examination one observed scores of lepra bacilli.

Use of sulfone preparations has arrested the disease in many cases, but treatment often was withheld due to the chronic anemic states of the natives.

I delivered my first child by the light of two flickering kerosene lamps in a room barely large enough for two tables and a washstand. After several weeks I did the deliveries assisted only by Suzanne, an African girl. In the middle of the night there would be a rapping at my door. Outside was a slender negro girl outlined by lamp light, "Docteur, docteur . . . accouchement!" And then she rushed back to the *Pharmacie*. I lighted my kerosene lantern and dressed hurriedly. In the night only a few fires still glowed. I picked my way along the dirt path past the staff quarters, down the steep hill, and stone steps, through the hospital to the *Pharmacie*. Huddled outside there were five or six family members. Inside the dimly lit delivery room were the patient and relative, usually her mother. Donning apron and gloves I examined the woman.

No medications or anesthetics are given unless complications are expected. Yet, I rarely heard a woman cry out, for the native women regard childbirth as a natural process which necessarily involves some pain. Childbirth is thus made easier, for the women are comparatively relaxed and able to aid in the delivery. This is in contradistinction to their

² Scarcity of sterile solutions makes debridement of wounds difficult. Once a week a copper distilling apparatus produces distilled water by the drop over an open wood fire.

Western sisters who often awake in a hospital room somewhat surprised to find they have become mothers. I cannot help but feel that with our "saddle blocks," "twilight sleep," and other obstetric wizardry we are depriving the mother of her prime creative act and increasing infant morbidity and mortality.

When labor was prolonged I slept on a table near the patient while Suzanne and the grandmother spread their mats on the floor.

After delivery the baby was cleaned, weighed, and clothed. He was placed in a basket and carried to the maternity cottage by the proud father. The grandmother disposed of the placenta (usually in the river), while the mother walked to a wooden stretcher and was carried to the cottage. She often was out of bed the following morning.

At night one walks through the maternity case only with difficulty, since husbands and children sleep on the dirt floor between the beds. It is never completely dark, and through the mosquito netting mothers are seen crooning to their newborn babies.

Meal times in the *Salle à Manger* or Dining Hall were attended by much conversation and joviality as the staff met together at one long table.

Food served was usually simple but well prepared. Most vegetables and fruits including lettuce, tomatoes, grapefruit, potatoes, pineapple, and lemons, are raised in the hospital gardens.

The river supplied fish, while at least once a week native hunters dragged a crocodile ashore. Only the tail is used for food; it often weighed 70 or more pounds. Crocodile meat is white, tastes like a cross between pork and veal, and has the consistency of scallops. Though I first tasted the meat gingerly, I later almost looked forward to seeing kitchen workers carrying a crocodile tail up from

the beach, for comparatively little meat is eaten at Hospital Schweitzer.

Each evening following supper Dr. Schweitzer played an ancient upright piano while everyone sang German hymns. He then read from the bible and gave a historical interpretation of the passage.

On Saturday evenings classical records were played upon a transistorized battery-powered phonograph while a few hundred yards away Africans squatted over small cooking fires.

The hospital grounds abound with animals. There are 150 goats and sheep, 120 chickens, 50 ducks, four turkeys, two pigs, 30 dogs, a herd of antelopes, 20 cats, two wildcats, a tame pelican called Parcival, two chimpanzees, a 2-year-old gorilla, and an owl named Mexico, fond of swooping down on visitors as they stumble along the path at night to the outdoor plumbing facility.

A few days after arriving at the hospital I was asked to assume the care of Peter, the gorilla. Dr. Schweitzer instructed me in the care and management of young apes. I was to hand-feed him 3 times a day and keep him in my room at night. Peter, I was to find, was like a child, mischievous, intelligent, inquisitive, and often dirty. If he thought I had overslept he pounded on the cage door until I awoke, whereupon he yawned and stretched while I attached his harness. Then Peter and I walked to a palm tree near the dining hall where he was chained during the day.

When time permitted, I took Peter to the beach where he delightedly rolled about in the sand, pouring it over his head and pot belly, all the while grunting happily.

By the end of summer he had grown too large to be kept as a pet. His home is now the Copenhagen Zoo.

On the day of my departure, late in August, Dr. Schweitzer wished me a safe

journey and invited me to return on completing my medical training. He added, with a twinkle in his eye, that he hoped my French would have improved when we next met.

CONCLUSION

The conception of a hospital where families accompany patients was valid in the Gabon 40 years ago and today has been adopted by some Western communities. The patient feels at ease, and the nursing staff may concentrate on important duties.

Moreover, Dr. Schweitzer has established a community where reverence for life is a reality. As a man of science, he long ago recognized the biological relationship between man and other living creatures. As a man of humanity he realized the necessity of respect for all forms of life. No one who visits the hospital can remain untouched by this concept.

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Experience with a *Post Hoc* Procedure for Evaluating Methods of Teaching a Medical Subject*

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Informed educators are painfully cognizant of the fact that the problem of how to teach is as difficult to solve as it is important. Advice on this matter is usually based on deduction or opinion surveys, but the application of the scientific method to problems of education might yield results more satisfying to medical educators. Unfortunately, however, well designed and well controlled teaching experiments are not commonplace in the field of medical education. Such exceptional studies as those on the teaching of pharmacology by Goldstein at Harvard (6) and by Joyce and Weatherall at London Hospital Medical College (7, 8) offer promise of yielding valuable information about teaching methods, but the tempo of work in this area is so slow that it seems probable a generation or more of medical students will continue to receive instruction without adequate knowledge regarding teaching procedures. Furthermore, although it is possible during the basic science years to set up experiments involving the pretesting of students, their randomized division into groups, and simultaneous teaching of the equated groups by different methods, the administrative obstacles to conducting adequate studies of this type during the clinical years are indeed formidable. One might hope that

professional educators will provide more scientifically valid data to answer some of the questions at hand, but there will always be uncertainties about the applicability of information obtained from small children to a highly selected group of mature adults, and surely medical educators themselves will have to evaluate such procedures as bedside teaching, outpatient teaching, etc.

In an attempt to provide some relevant information about teaching allergy until such time as more definitive studies are carried out, it was thought to be of interest to compare graduating medical students' knowledge of allergy with the type of teaching programs at various medical schools. This type of *post hoc* approach seemed particularly applicable to allergy, since there are wide variations in the teaching programs in this field at different schools (9). It was recognized from the outset that there are major limitations to conclusions which might be drawn from such a retrospective study owing to the many variables involved. The latter may be grouped largely into the five categories indicated in Table 1.

The student.—It is immediately apparent that student performance might be related more to differences in student caliber at various schools than to differences in teaching. To control this factor, it was decided also to test the students on other aspects of medicine, and major emphasis in analyzing the results was

* This study was supported in part by the Education Committee of the American Academy of Allergy.

TABLE 1
MAJOR FACTORS AFFECTING STUDENT
PERFORMANCE ON TESTS

1. The Student
 - General Caliber
 - Extraneous Factors at Time of Test
 - Interest and Motivation
2. The Test
 - Written vs. Performance
 - Reliability and Validity
 - Time of Test
 - Announced or Unannounced
 - Type of Questions
 - Breadth, Balance, Non-Controversial
 - Understanding, Application of Principles, Information
 - Wording of Questions
3. The Teaching Method
 - Type
 - Amount of Instruction
4. The Teacher
 - Knowledge of Subject
 - Effectiveness in Utilizing Teaching Method
5. Independent Reading and Other Sources of Information

placed on the difference between the allergy score and the "other" score, each student thus acting as his own control. The student's health and state of tension or fatigue at the time of the examination would also be controlled by this procedure. Artifacts due to variation in student interest were reduced by excluding from consideration schools having voluntary elective courses in allergy.

The test.—Written examinations do not necessarily give a valid index of students' present or future performance in managing allergic patients. However, a performance test not only would be entirely impractical but offers major problems in evaluation (2). An objective, multiple-choice type examination was selected because of the demonstrated validity and reliability of such tests (3, 4) under suitable circumstances, as a matter of convenience for statistical analysis, and because much information can be obtained about the student's

knowledge in a short time (13). Another limitation is that students' performance after being in practice a number of years may not parallel results of examinations at the time of graduation (14). Some sources of error were circumvented by utilizing questions broadly covering the field of allergy, avoiding controversial subjects, pretesting the questions for clarity and suitability, and by submitting the test to prominent allergists from several areas of the country for critical review.

The teaching method.—This is the variable which this study hopes especially to evaluate. The amount of teaching must be considered as well as the method.

The teacher.—Both the teacher's knowledge of the subject and his effectiveness in utilizing the teaching method being employed are relevant. In order for the proposed study to be valid, it need not be assumed that the quality of allergy teacher knowledge is similar at the various schools but rather that the ratio of allergy teacher knowledge to non-allergy teacher knowledge be similar among the several schools or else that the level of material being presented to the students is such that teacher knowledge is not a limiting factor in the teaching process. These matters will be considered more extensively in the discussion of the results. As far as effectiveness in utilizing teaching methods is concerned, it is possible that in outpatient and bedside teaching situations this may depend as much upon the student as upon the teacher. Although the value of a teaching method might be obscured by ineffective usage, it does not seem likely that "false positive" results would be obtained.

Independent reading and other sources of information.—Although extraneous sources of information tend to confuse the evaluation of teaching, to the extent that a teaching method influences students to seek additional information on

a subject, it seems appropriate to "credit" such knowledge to it.

METHOD

Construction and revision of the test.

—Since it seemed possible *a priori* that different methods might be preferable for teaching the basic science aspects of allergy than for applied clinical allergy, the allergy section of the test was divided into these two parts. An effort was made to achieve proper breadth and balance by listing the areas to be covered and assigning an appropriate number of questions to each. In the basic science field this involved immunology, pharmacology, pathology, pulmonary and vascular physiology, and biochemistry. The clinical areas included childhood and adult asthma, rhinitis, allergic skin disorders, clinical testing methods, and therapeutics. Vertical to these were listed different types of questions such as understanding of general principles, application of principles, factual information, problem solving, etc. Appropriate multiple choice questions then were devised. The wording of the questions was minutely reviewed for ambiguity and for leading or misleading phases. A similar procedure was used for constructing the control questions which were equally divided into questions on internal medicine and questions on all phases of medicine other than internal medicine or allergy. The questions were such that any number of the multiple choices might be correct; i. e., in a four-choice item there might be one, two, three or four correct answers presented. The student thus was forced to react to each choice rather than merely looking for a single "best" answer.

The allergy questions were first pretested on a group of our own senior students in March, 1957, and on the basis of this experience some immediate changes in the test were made. More ex-

tensive pretesting of the entire examination was carried out at two other medical schools in May, 1957. A careful analysis of the pretest results was made by determining item difficulty and discrimination indices for each response to every question. The former enabled identification of responses which were either too easy or too difficult to be of value. The item discrimination indices correlated each response with results on the tests as a whole. Responses having a negative or low correlation with results on the test as a whole were identified as being "weak" questions and discarded. In addition, helpful criticism of the questions was obtained from allergists at the schools participating in the preliminary tests, from several prominent allergists throughout the country whose opinions were solicited, and from a group of medicine and allergy residents at our institution who volunteered to take the test. After making the indicated deletions, the revised and contracted test had a reliability coefficient of 0.84 for the pretest schools. This is a calculated estimate of probable variability on repeated testing, and the figure given is felt to be satisfactory for group evaluations. The revised test had 60 responses in each of the following categories: internal medicine, general medicine, basic science allergy, and applied clinical allergy.

Testing.—In evaluating the pretest results, it became evident that the presence of an elective course in allergy at one of the schools severely limited the potential usefulness of the data in the proposed study. Furthermore, it was felt that intra-school comparisons between students who did and did not take voluntary electives in allergy could not be used as a valid index of teaching accomplishment, since the factor of student interest might also importantly affect any observed differences. Since there appeared to be no data available concerning which medical

schools have elective courses in allergy, a questionnaire was prepared and sent to representatives of the American Academy of Allergy at almost all the medical schools in the United States and Canada. Besides data about elective courses, additional general information was obtained concerning hours of allergy lectures given by the section of allergy and by other departments, time spent in the allergy outpatient clinic, etc. This information serves to supplement and update information obtained by the Allergy Foundation of America several years ago (9). A letter accompanying the questionnaire explained the proposed examination and broached the question of participating in the test program. Replies were received from 49 schools. Institutions with widely varying teaching programs and no electives in allergy were especially encouraged to participate in the test. All, or a randomly selected portion, of the seniors at twelve medical schools were tested in the spring of 1958, and an additional school was tested in 1959. In announcing the test, the schools were requested not to indicate that the examination was primarily on allergy. The answer sheets were returned to Ann Arbor for machine grading and tabulation of the results.

Method of analysis.—The raw score means and standard deviations were tabulated for each school for each of the four portions of the test, for the first two portions combined (i. e., the total nonallergy score), for the third and fourth parts combined (i. e., the total allergy score), and for the test as a whole. Since at one school a *randomly selected* part of the class had had allergy outpatient clinic work and the other part had not, data from this school were reported both as a whole and in two component parts. To facilitate comparisons, the raw scores were converted to standard scores in such a manner that the

mean of all schools for each subtest would be 50 with a standard deviation of 10 (Table 2). The significance of deviations of individual school means from the mean of all schools is influenced, of course, by the number of students tested at the various schools. To facilitate estimates of significance, curves for *P* values of 0.01 and 0.05 were drawn on a graph plotting mean standard scores against the number of students tested. In a somewhat analogous manner, a table was prepared to aid in estimating the significance of differences in scores achieved on different parts of the test by students at the same school. In this instance, however, different calculations were used, since one is dealing with paired data having an appreciable coefficient of correlation. Finally, attempts were made to discover relationships between differences in mean standard scores achieved on various portions of the test and the teaching program at the various schools.

RESULTS

It was possible to arrange to have the examination given at the following medical schools: Baylor, Buffalo, Hahnemann, Iowa, Marquette, Northwestern, Oregon, Temple, Vanderbilt, Vermont, U. of Washington, George Washington, Western Ontario, and Wisconsin.¹ In some instances only a randomly selected portion of the senior class was examined. Although there is a wide and fairly even geographic distribution in the schools tested, it should be pointed out that this

¹ The authors wish gratefully to acknowledge the cooperation of the following persons in arranging to have the examination given at these schools: Drs. Carl E. Arbesman, George I. Blumstein, Elizabeth Brown, Seymour B. Crepea, Samuel M. Feinberg, William A. Howard, DeWitt H. Hotchkiss, Jr., Harold E. Medivetsky, Merle W. Moore, James C. Overall, Paul S. Seeborn, Theodore L. Squier, John H. Toogood, Paul VanArsdel, Jr.

is not a random sample of the medical schools in the United States and Canada. On the basis of the questionnaires received from 49 medical schools, there is good reason to believe that most of the schools examined had considerably stronger teaching programs in allergy than the average. Probably more conclusions could have been drawn from the study had it been possible to test additional schools, particularly those with very limited teaching programs in allergy.

The following results suggested that the revised test was in fact capable of measuring knowledge of allergy:

1. Students at one school, tested at a time when they had had no lectures or outpatient work in allergy, scored significantly lower than the average on the basic science and clinical allergy questions, and the difference between their allergy scores and non-allergy scores was significant (Table 2, school 13).

2. Scores of seventeen allergy residents or medicine residents who had spent 2 months full-time on an allergy service were much higher than the students' both in respect to their basic science and clinical allergy scores and their allergy-non-allergy score difference (Table 2). Furthermore, one faculty member at another school took the test with the students under a fictitious name and scored far higher on both the basic science and clinical allergy questions than any student in the country (116 of 120 responses considered correct).

3. At the school where only a randomly selected portion of the class (designated 10a in Table 2) had allergy out-patient experience, these students did significantly better than the mean on the clinical allergy questions, whereas the other portion of the class (designated 10b) did not. Also, only the allergy out-patient group at this school had signi-

TABLE 2
MEAN STANDARD SCORES

INSTITUTION	NUMBER TESTED	INTERNAL MEDICINE	GENERAL MEDICINE	BASIC SCIENCE ALLERGY	CLINICAL ALLERGY	TOTAL NON-ALLERGY	TOTAL ALLERGY	TOTAL
	N	1	2	3	4	5 (1+2)	6 (3+4)	7 (1+2+3+4)
1	96	43.91	45.76	43.02	48.37	43.86	44.75	43.38
2	112	52.98	50.41	49.86	50.00	52.07	49.90	51.15
3	71	51.98	50.04	53.37	52.56	51.26	53.51	52.74
4	22	51.46	53.04	46.83	49.32	52.60	47.62	50.17
5	46	56.71	51.50	52.06	49.34	55.01	50.91	53.46
6	23	47.67	45.67	48.46	45.23	46.14	46.37	45.65
7	25	51.25	50.65	49.42	52.74	51.14	51.14	51.31
8	78	51.17	56.20	50.52	48.21	54.17	49.32	52.06
9	15	51.50	46.33	52.14	44.41	48.90	48.24	48.34
10a	31	45.99	53.37	54.01	53.05	49.37	54.23	52.02
10b	59	49.98	51.59	52.59	50.50	50.88	51.89	51.59
11	14	53.44	46.43	56.67	55.34	50.16	57.11	54.14
12	105	47.72	47.48	50.00	50.52	47.18	50.29	48.50
Total	697	50	50	50	50	50	50	50
School without Allergy out-patient or lectures	13	53	42.69	47.37	42.04	38.72	43.98	38.75
Allergy and Medicine residents: 1957	13	64.47	49.02	61.10	77.83	55.32	72.31	65.85
1959	4	70.12	48.54	61.52	89.43	61.69	78.99	73.41

ificantly higher allergy than non-allergy scores.

Some general validation for the test as a whole was derived from the observation that student scores correlated well with class standings at the two schools where this comparison was made. Another intra-school observation of interest was that the allergy scores correlated significantly more closely with the internal medicine scores than with general medicine scores at the two schools where this was evaluated. Information about the reproducibility of the results on repeated testing at the same school would be desirable, but at the one school where this was attempted, there was significant improvement on several parts of the test the second year. It seemed possible that handing down of information about the test by the students or changes in material presented could have occurred. The aforementioned calculated reliability coefficient would predict reasonably good reproducibility under unchanged conditions.

The major analysis of the test results was based on data from the twelve schools examined in 1958, one school being considered in two parts (as explained previously). These were schools 1-12, Table 2. Attempts were made to correlate hours of allergy lecture, hours of allergy out-patient work, various combinations thereof, and other factors with differences in scores on various portions of the test. The data obtained by the questionnaire and used for making these comparisons are shown in Table 3. Of the many possible associations investigated, significant results were achieved only in regards to clinical allergy - non-allergy score differences and hours of allergy outpatient work. After suitably weighing the data for the number of students tested, schools requiring more than 10 hours of allergy out-patient experience had an average difference of

TABLE 3

TEACHING PROGRAMS AT SCHOOLS TESTED

SCHOOL	HOURS OF LECTURE ON ALLERGY		HOURS OF ALLERGY OUT-PATIENT CLINIC EXPERIENCE
	By Allergy staff	By others	
1	10	4	18
2	11	10	0
3	2	0	18
4	3		18
5	14	0	15
6	4	1	4
7	16		30
8	8	8	8
9	2	7	12
10a	4	0	18
10b	4	0	0
11	6	0	14
12	8	12	8-16

+1.65 between the mean standard scores on the clinical allergy portion of the test and the non-allergy portion, whereas the comparable figure was -2.66 for schools requiring less than 10 hours of allergy out-patient experience (Table 4). The net difference of 4.31 is significant at the 1 per cent level of confidence. Although small, this difference amounts to two-fifths of a standard deviation of the individual student measures. It would be even greater if the school which had offered neither lectures nor outpatient work at the time of the test had been included in the calculations, and its significance was confirmed by two other types of statistical analysis.

TABLE 4

COMPARISON OF TEST RESULTS
WITH ALLERGY OUT-PATIENT EXPERIENCE

Schools	MEAN STANDARD SCORES		DIFFERENCE
	Clinical allergy ques- tions	Non- allergy ques- tions	
With over 10 hrs. required allergy out-patient experience	50.44	48.79	+1.65*
With less than 10 hrs. required allergy out-patient experience	49.19	51.85	-2.66*

*P < 0.01.

This relationship between allergy out-patient clinic experience and performance in clinical allergy is not unreasonable. Because the large majority of cases of allergic disease are not admitted to hospitals, the student is likely to see most forms of these common illnesses only in out-patient clinics, a point which has been stressed by prominent educators in allergy (17). It would appear that, with the medical clerkship experience alone, students are less well versed in clinical allergy than when they are afforded the additional opportunity of seeing patients in an allergy out-patient clinic. On the other hand, it may be noted that no significant association could be established between allergy out-patient clinic experience and performance in basic science allergy or consequently the total allergy scores. These results may be owing to the nature of out-patient teaching, the limited extent of this study, or to the possibility of "false negative" results in the design of this study.

DISCUSSION

The many variables which need to be considered in evaluating teaching methods (Table 1) may raise doubts about the feasibility or wisdom of even attempting controlled studies in this complex field (1). Upon closer scrutiny, however, these variables appear to be divisible into three categories. First, there are factors which could be expected to affect the results but can be accounted for by appropriate controls. These are exemplified in the present study by controlling variations in student caliber at the different medical schools by testing the students on other subjects than the one being evaluated, each student thus acting as his own control. Second, one can always think of a number of factors which, though present, would appear to be irrelevant to the problem being evaluated. Third, there may be possibly rele-

vant factors which cannot be controlled. To some extent these may be accounted for as recognized limitations of the experiment in interpreting the results. The present study relates teaching methods to student achievement at the time of medical school graduation, but the results must be recognized as not necessarily being applicable to professional performance years after graduation. It is also recognized that ineffective utilization of a teaching method by instructors might lead to "false negative" results in the design of this study; that is, there could be failure to demonstrate the efficacy of a good teaching method if it were not utilized well by the teachers; it seems unlikely, however, that a poor teaching method could yield "false positive" results. Finally, uncontrollable variables may be reckoned with if the study is designed so that they are randomly distributed among the groups under comparison. Such variables should be identified and their random distribution documented.

The factor of teacher knowledge appears to be the variable which offers the greatest difficulty in evaluating teaching methods by the type of *post hoc* approach employed in this study. We feel that teacher knowledge probably did not appreciably affect the results of this particular study for the following reasons:

1. Students of authors of two of the major textbooks in the field did relatively poorly on the allergy questions in the absence of allergy out-patient experience.
2. A very eminent allergist teaches at the school where only a randomly selected group of students had allergy out-patient experience. Only his students who had out-patient experience did significantly better than the mean on the clinical allergy questions.
3. As mentioned previously, in order for studies of this type to have validity, it need not be assumed that the knowl-

edge of allergy teachers is similar at the various schools. Instead, the assumption is required either that the ratio of allergy teacher knowledge to non-allergy teacher knowledge be similar among the schools studied or that the level of material being presented to the students is such that teacher knowledge is not a limiting factor in the teaching process. On *a priori* grounds, it seems probable that the former assumption generally would be warranted, though undoubtedly there would be individual exceptions. Also, the level of difficulty of the test used in this study was such that most teachers of allergy would be thoroughly familiar with the material covered by the clinical allergy questions.

4. As a matter of interest, the number of publications in the past 5 years by the chief adult allergist at the institutions participating in this study was ascertained, and there was found to be no association between teacher publications and student performance on the test described in this paper. Little weight is given to this observation, however, because publications may not always be a reliable index of teacher knowledge, since pediatric allergists contribute importantly to teaching at some schools, and since, as indicated in the preceding paragraph, it is teacher knowledge of allergy relative to teacher knowledge of other subjects *at the same school* which is really relevant.

In addition to the teacher's knowledge and effectiveness in utilizing the teaching method being evaluated, the factor of selection of material presented to students also may affect examination results. This implies that there must be some general agreement as to what should be taught in the field being evaluated, and the desirability of having the questions submitted or screened by qualified persons from widely scattered locales becomes evident.

There are three additional qualifications to the interpretation of the results of this study. One is that the demonstrated relationship between allergy out-patient experience and student knowledge of clinical allergy does not necessarily represent cause and effect. Both could be due to some third factor. Another consideration is that the time interval between a teaching exercise and the examination could well be a significant factor in the results. In the present study, it is possible that other types of special teaching exercises than allergy out-patient experience during the senior year could also have shown a favorable effect on student performance. Nevertheless, the information that students whose medical clerkship is supplemented by allergy out-patient experience perform significantly better on a clinical allergy examination is of interest even though it is not implied that allergy out-patient work is necessarily the only supplementary teaching which might be useful. Finally, although the difference in performance between students with and without substantial allergy out-patient experience is statistically significant, the magnitude of this difference is admittedly small. Whether this statistically reliable difference is of practical significance is a matter of judgment.

No significant association could be established between allergy lectures or lectures combined with other teaching exercises and relative basic science allergy performance, clinical allergy results or total allergy scores. However, these findings do not discredit lectures as a teaching medium. In the first place, as previously mentioned, variations in teaching effectiveness could lead to "false negative" results in the design of this study, and teaching effectiveness might be more important in regard to lectures than out-patient clinic work. Results also may have been influenced by

the varying time interval between the lectures and this examination, by lecture attendance, and by the small number of schools studied.

Failure of the basic science allergy—non-allergy mean standard score differences to correlate with any of the tabulated teaching activities perhaps should not be surprising. Teaching responsibilities in this field are so diffusely distributed that accurate quantification at a number of schools is almost impossible.

A final problem is the possible general usefulness of this type of *post hoc* approach toward solving problems of medical education. As indicated in the introduction to this paper, it seems clear that well designed, well controlled educational experiments have greater potential usefulness for solving problems of medical education, and it is encouraging that there has recently been increased activity in this field (5, 10). In evaluating such work, however, caution needs to be exercised to insure that the heightened student and faculty interest usually attendant upon experiments in education does not in itself influence the results (15, 16). In addition, the numerous questions which must be answered and the extreme difficulty in setting up adequately controlled experiments in many cases indicate the urgent need for more simple and rapid methods to help solve some of the problems at hand. Perhaps the described type of *post hoc* approach can be of some limited value in cases where it appears that many years will elapse before more definitive experiments can be carried out.

In the field of medical education, the cancer achievement testing program (11, 12) has some similarities to the procedure described in this paper. The major difference in the two methods is the pretesting of the students in the early years of medical school as part of the cancer

achievement program. Pretesting provides data giving a relatively direct measure of student achievement, though this is accomplished at the cost of multiple examinations over a considerable period of time. However, differences in the capacity of students at various schools to learn is an important variable which is not controlled by this procedure, if one wishes to use it for evaluating teaching methods. In analyzing the results of the cancer achievement testing program, MCAT scores were used to match schools on the learning capacity of their students.

This initial experience with the described *post hoc* method would suggest that it is most likely to be useful for evaluating teaching methods under the following circumstances:

1. Wide variations in current teaching methods.
2. Teaching at a level where faculty knowledge is not a major limiting factor in the material presented.
3. Some general agreement as to what should be taught in the field being evaluated.
4. Exclusion of schools having voluntary elective courses in the subject under study.

Only positive results can be considered significant by this method, since there are a number of possible sources of "false negative" results.

SUMMARY

A method has been described for evaluating teaching methods on the basis of comparing student achievement at various schools with the types of teaching programs at these schools. It is important to control such studies by testing the students also on other phases of medicine, and major emphasis in analyzing the results is placed on the *difference* between the achievement test score and

control score, each student thus acting as his own control. This procedure has a number of limitations which have been considered. In spite of these, it was possible to show a statistically significant positive association between outpatient teaching and knowledge of clinical allergy.

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APPENDIX
RAW SCORE MEANS AND STANDARD DEVIATIONS

INSTITUTION	No. TESTED N	SUBTEST						
		Int. med.	Gen. med.	Basic Science Allergy	Clin. Allergy	Non- Allergy (1+2)	Allergy (3+4)	Total (1+2+3+4)
		1	2	3	4	5	6	7
1	96	36.03	37.47	35.23	34.35	73.50	69.61	143.11
		5.08	4.87	4.48	4.61	8.69	7.76	14.35
		40.69	39.61	38.66	35.07	80.29	73.73	154.02
2	112	4.17	4.48	4.95	3.94	7.30	7.54	13.44
		40.18	39.44	40.42	36.20	79.62	76.62	156.24
3	71	5.39	5.01	4.59	4.63	8.77	8.10	14.42
		39.91	40.82	37.14	34.77	80.73	71.91	152.64
4	22	4.53	3.56	4.69	3.29	6.94	6.36	11.43
		42.61	40.11	39.76	34.78	82.72	74.54	157.26
5	46	4.24	3.88	4.12	3.42	6.64	6.29	9.81
		37.96	37.43	37.96	32.96	75.39	70.91	146.30
6	23	7.00	4.72	5.26	3.74	10.79	7.53	16.43
		39.80	39.72	38.44	36.28	79.52	74.72	154.24
7	25	4.41	4.83	4.35	4.40	7.19	7.68	12.87
		39.76	42.27	38.99	34.28	82.03	73.27	155.29
8	78	5.41	4.13	4.90	4.80	8.05	8.20	14.35
		39.93	37.73	39.80	32.60	77.67	72.40	150.07
9	15	2.74	4.01	4.26	4.24	5.57	6.75	11.26
		37.10	40.97	40.74	36.42	78.06	77.19	155.23
10a	31	4.32	3.67	5.32	4.63	6.55	8.35	11.86
		39.15	40.15	40.03	35.29	79.31	75.32	154.63
10b	59	5.02	4.38	5.45	3.52	8.04	7.55	13.22
		40.93	37.78	42.07	37.43	78.71	79.50	158.21
11	14	5.56	4.14	3.49	5.90	7.89	8.69	14.10
		37.99	38.26	38.73	35.30	76.25	74.04	150.29
12	105	4.31	3.79	4.17	4.34	6.84	7.11	11.93
		39.16	39.42	38.73	35.07	78.58	73.81	152.40
All Insti- tutions:	697	5.14	4.60	5.01	4.42	8.27	8.00	14.03

Teaching of Nonpathological Behavior and Development in a Pediatric Setting

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For over a decade, a variety of authors (4) have discussed many different aspects of what has generally been termed teaching of comprehensive medicine. At the last Congress of Medical Education and Licensure (1-3) it was again clear that there is no unanimity of thought as to what constitutes comprehensive medicine, let alone how it should be taught. Perhaps on an empirical basis, most medical educators agree that it is important to include the teaching of comprehensive medical care even though they are not at all clear as to what is implied by this term. Although this presentation will not settle matters, it is an attempt not only to describe a particular teaching program, but also to convey some of the thinking which went into the original planning.

PURPOSE

Partly as an outgrowth of a successful experience in teaching mental health concepts to pediatric residents in a pediatric setting, it was decided to carry the teaching idea further by providing a program for senior medical students. Recognizing the futility of attempting to encompass all of the innumerable facts of medical

psychology in the amount of time that was available, initial plans were accordingly limited. The prime objective was to provide a clinical or laboratory experience so that the student would have the opportunity to view certain aspects of nonpathological human behavior and at the same time to improve his ability to make critical observations in this area. As a secondary objective it was hoped that the student might increase his capabilities in dealing effectively with human interplay.

BACKGROUND

Although many aspects of medical teaching might profit from a periodic review, this is frequently not done. Since there has been extensive criticism directed toward the behavioral sciences because of the vagueness of theory and content and the inept methodology, it seemed important prior to the onset of the actual teaching program to attempt to justify why there should be teaching of this material in the setting to be described. Therefore, prior to the inception of the program, the instructors devoted time to formulate logical and concise points for why this material should be presented. In addition, by having these points clearly in mind, the instructors believed that they would be better able to execute the teaching objectives. Realizing that the time allotted for this purpose was brief, it seemed wise to have limited

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objectives. Consequently, only certain selected observations and discussions were provided.

The following list contains the points used as justification. (a) Emotions are important factors in the maintenance of both physical and mental health, as well as in the production of physical and mental illness. To be unaware of this fact or to depreciate it will impair the student's ability to accomplish the complete role of a physician. (b) In dealing with children there should be an understanding of the physical and psychological stages of development. It would be important for the student to have an appreciation of the broad range of normal development and an awareness of the enormous influence environment may have on this development. (c) The physician is frequently a source of information about many things for his patients. It becomes important, therefore, that he should have an understanding of the subject, as extensive as possible. If the physician allows his own problems to intrude upon those of his patient, he may not be as successful in giving this information as he would like. Consequently, an awareness of his own attitudes is helpful in this regard. (d) It is, of course, easier to work efficiently and effectively with people of one's own persuasion, but the physician is often called upon to deal with both adults and children who have notions and fears founded in bias and partial truths, and who either actively or passively may resist efforts to provide them with assistance whether this be in the realm of either physical or emotional problems.

SETTING AND SUBJECTS

The senior class, consisting of about 100 students, was broken down into subsections of ten students each. Each of these sections rotated through pediatrics for a period of 3-4 weeks. During the

course of the senior pediatrics section a block of 3 consecutive hours every week was allocated for the purpose of this presentation. In the junior year the student had a clinical clerkship of 6 weeks in pediatrics, and in the sophomore year there was some time given to problems of children in the class on physical diagnosis. Except by precept, little time was given in the junior year to teaching nonpathological behavior and development. In the sophomore year there was series of ten lectures on certain aspects of development of children.

There were essentially three places where the work was carried out. The first was the pediatric out-patient department. The senior pediatric program during the time of this study was largely given over to consideration of problems relating to child-health supervision. In the morning the students would have discussions of many aspects relating to pediatrics. This program was one of those sessions. Each afternoon the students would see patients in the Child Health Clinic. These children might be completely well or might have some acute illness for which their mothers would bring them in. They would see the child first and then would be checked by a resident or staff physician. However, every effort was made to have the student take the role of a physician and not a clerk. The next area was the University pre-school, which is under the supervision of the Iowa Child Welfare Research Station. This facility has a central area in the building which is used as an observation booth, being equipped with one-way vision screens.

The instructors were a pediatrician, a psychiatric social worker, and a clinical psychologist.

PROCEDURES AND METHODS

The pediatrician met with the subgroup of ten students to give them a

brief initial orientation, at which time the aims were presented in a general fashion. They were then broken into smaller groups of three or four, randomly selected. No mention was made as to the distinction of the discipline of the three instructors. This was done deliberately, since it had been the thought that the less said about any distinction the better things might go.

The sub-group of three or four would then remain with the particular instructor for the length of the pediatric section, in an effort to develop the maximum of individual relationships. The social worker and the psychologist had little contact with the students other than in these sessions, but the pediatrician had other teaching responsibilities with the section as a whole. Each of the three instructors, because of their different backgrounds and experience, handled the actual teaching in different ways. Systematic cross-communication was maintained at all times, which served as an aid in developing the methodology and also as a means to be reminded of common objectives.

Observation in the nursery school, showing movies depicting nonpathological child behavior, case material derived from the Child Health Clinic, personal experiences of the students, and discussions about these experiences were used in varying degrees by each of the instructors.

The social worker met with her group with a definite teaching plan in mind. Although the sessions were planned, it was not done to the extent that the students were held to a rigid schedule. Effort was made to meet the needs of each individual group to provide an emotional climate in which willingness to learn had a chance for being at its best, to provide continuity, and to impart some knowledge of the behavior of the normal child and of human behavior in general, particularly as related to a pediatric setting.

The first session was usually an attempt to become better acquainted. The group was informed that these sessions were for their use and that they could bring up problems related to their clinical experience freely. This usually opened the way for spontaneous discussions of their interest which in turn determined the areas of discussion in subsequent sessions. A movie showing behavior and interests of normal children in everyday life was seen and discussed.

The next session was a visit to the University pre-school. In this session a single child was not pointed out for discussion, but the total milieu was considered. In most instances a discussion period followed, at which time each student was invited to contribute his observations to the group.

During the third and fourth sessions the students usually spent some time talking about their pediatric cases. In connection with this they would ask questions about specific problems. For example, how would one tell parents about mental retardation or when should a child be told of his adoption. Some groups also had the opportunity to watch another social worker interview a parent.

The pediatrician probably had the most structured sessions. The pre-school setting was used exclusively. The time was spent with 1 hour of observation followed by 2 hours of discussion. Each student was requested to single out a particular child to be observed in subsequent sessions. In these sessions the pediatrician would always simultaneously observe the same children that were singled out. In the discussion period each student was requested to report about this child in as detailed and graphic a manner as possible. The pediatrician would frequently challenge any interpretation of behavior which might be given in the statements by the student if it were not substantiated by observational material. The

attempt at interpretation would be dropped if there seemed to be no way of resolving it, and a suggestion would be made to observe this point at the next session. During the subsequent periods of observation there was a distinct increase in the amount of material that was presented. The pediatrician would often relate the importance of becoming a better observer to other aspects of medicine.

The psychologist's sessions were probably intermediate as far as structure was concerned. His sessions were planned as having a definite sequence in mind. The first session was largely a get-acquainted session. There would be a discussion of interaction of behavior in any clinical situation. This was specifically not limited to children. He would draw them out as far as their own feelings were concerned but did not ask or challenge for evidence. He attempted to develop relationships as a group.

In his second session the group would generally go to the University pre-school. Here each of the students selected a child. In the discussion that followed he would discuss what normal children in this age (3-4) were like and interpret to them what the behavior could mean. In this period he did not discourage digressions in the discussion. At the close of this session the students were instructed about the third session, which was set up to be an opportunity to discuss their interviews with mothers as seen in the Child Health Clinic.

Bringing their experiences in the Child Health Clinic to the next session, there would be a discussion of specific techniques of management. Personal problems were discussed as they related to doctor-patient relationships. Effort was made so that the students might derive some generalization out of these sessions. Such an example would be that anyone who is ill has some anxiety and

that this will express itself in the individual's behavior.

DISCUSSION OF RESULTS

Only subjective opinions can be stated concerning the results. Although greater objectivity in evaluating this type of teaching is sorely needed, no techniques seem appropriate at the present.

There may be other points that could be stated as to why it would seem important to incorporate this material in the teaching program of medical students in pediatrics. Although certain of these aspects would be touched upon in other courses, a repetition is often useful for the ultimate understanding and acceptance of any subject. However, the teaching of normal human development in medical schools is frequently of a didactic variety. In the clinical setting the medical student is commonly confronted with severely abnormal pathology. To enhance previous information concerning normal development it was considered that a laboratory type setting would be the most useful. It would seem that before much understanding of human behavior can take place the individual must see it in action. Just as teaching in other areas of medical education is enormously helped by permitting the student to participate in one form or another, so it would seem to be in the area of nonpathological human development.

Perhaps because of the somewhat different methods used in teaching, the instructors had different opinions about the results. There were certain shared feelings, however. Most of the students seemed to come away from the sessions being better able to observe. The comments during the course of the sessions became more penetrating and more sophisticated.

How much real change might have taken place in any of the students was

certainly not possible to say, but this was not at any time a goal. There were very likely great differences as far as individual students were concerned. The discussion that follows is an attempt to illustrate how the specific goals, as listed above, were achieved.

There was frequently much prodding in the beginning on the part of the instructor to have the students describe certain aspects of behavior. Later in the sessions many would observe that similar behavior may mean many different things and be motivated by a variety of things. Some of them were able to distinguish subtle aspects of behavior rather nicely. They would see, for instance, that aggressive behavior does not always mean hostility. They would begin to see certain aspects of instinctual behavior, both aggressive and sexual. By and large it was easier for them to comprehend the aggressive behavior.

A similar observation might be their realization that one can communicate a great deal without resorting to the use of language. Sometimes through the mere reporting of their observations they learned some facts about the normal developmental levels and acquired an insight into the variations of these levels as seen among a small group of 3- and 4-year-old children.

They would get some feeling that in different situations a particular child might look quite different. For example, a child who appeared at ease in a more structured in-door situation might appear inhibited and unsure of himself in an outside setting. Occasionally, they would observe that there were apparently unconscious forces influencing a child, and it was not always that the child was spoiled, willful, or simply seeking attention as seen in a child who was having difficulty sharing his teacher's attention with other children as the result of his problems of sibling rivalry.

It was gratifying to see how the students improved their ability to comprehend something of the total child. Initially a child on the edge of the group would be described as being quite passive. Later this same child might still be termed passive, but it would be noted that his hands were being clasped and opened and that he seemed to be longing to enter into a particular activity.

Some differences in parent-child relationships were recognized, and a concept was developed that these were often determined by the parent's own attitude and manner. One father was observed who had more difficulty separating from his son than the boy did from his father. This man repeatedly tried to draw the child's attention to toys that evidently had been brought from home to help the boy over an expected crisis. Showing only polite interest, the boy went off happily to play with other children as soon as his father left. The students again observed that one mother, in the process of taking her child home, asked him repeated questions but never waited for an answer. She was so rushed that the child became frustrated and exhibited a temper tantrum. In contrast, they spoke of another mother who introduced the idea of going home in a quiet, unhurried manner. She waited to put on the child's coat until he had finished his picture and did not object when the child dashed back to the classroom to get his picture. They could understand why this mother and child left happily together. This type of more subtle and sophisticated observation became more frequent during the subsequent periods of observation.

They would report from time to time aspects of behavior seen elsewhere, either in their own home, those of friends, or in the Pediatrics Clinic. Having helped the students to become more aware of interpersonal relationships, they were encouraged to discuss pediatrics as seen

in the out-patient clinic.

Initially there were many observations made of just the child without relating the child to either the other youngsters in the group or the adults. Later in the sessions there would be short statements about how the child seemed with the adult, and conjectures were made as to what this might mean. They were impressed that fourteen or twenty children could get along with each other. The students recognized that this was largely due to the teacher's personality in relationship to the children. They observed that the teacher did not punish the youngsters but used other techniques such as distraction as a means of controlling certain antisocial behavior.

Frequently questions were asked that indicated a much deeper emotional awareness. Drawing from their own life experiences, many reported observations about their own children or those of neighbors and friends. In discussing the problems of discipline, one student announced that children should be spanked and forced to obey adults regardless of what they felt. Another student remarked that he did not believe in this and cited as an example his own father having handled misdemeanors by setting a good example. During the discussion of how people react to authority, the student who recommended spanking was the first one to say that an abrupt command made him angry and he would usually react by doing the opposite. The others agreed and related it to the feelings of the child. The first student then expressed surprise that the child might feel and react in a similar fashion to an adult. He had never thought of it in those terms.

There was also some appreciation for the fact that one's own feelings could often color the way in which something appeared. Statements were made like, "I guess I think of this child as being pretty

naughty because this is what was always told to me." In the clinic situation the students frequently made mention of the things they had seen and discussed elsewhere. Sometimes there would be statements that this was the first time a particular type of behavior had been perceived. The students in general seemed to be looking for guidance to help organize their already existing knowledge with that which had been presented in these sessions.

It seemed to come naturally that they progressed from parent-child relationships to those of parent-patient-doctor relationships. There might be a discussion on how a physician should inform a parent of a serious condition in his child, realizing that this could be a painful experience for the parents. They came to think about what illness might mean to a patient and his family. When one group had watched a student social worker interviewing a mother who was discussing her mentally retarded child, the students were impressed by the impact of the situation. One student verbalized it, saying, "I never realized how long it takes a person to show what he really feels. It took this mother 10 minutes before she broke down and cried. I guess a doctor rarely has time to observe this type of behavior." Frequently there was discussion of how one might feel when a patient cries. Most of them felt ill at ease or even angry. They realized that to cry or to feel anxious is normal when a person is faced with pain or the unknown. They were also helped to realize that having anxiety was normal and that the crucial factor was how one dealt with it.

One particularly important aspect seemed to be in helping students with their feelings of inadequacy. Frequently the students would present their doubts as to whether they would be able to comprehend the enormous complexities in the

field of medicine and how they would manage in their years ahead. Such comments were useful in pointing out that uncertainty of the future was a common factor for all human beings and that this had direct implication to their relationships with patients. They could see that the uncertainty of not knowing the diagnosis or the prognosis would be anxiety-producing, and that if the patient had considerable fantasy along with it, he might well become more anxious.

During the course of the year the instructors were plagued by whether the objectives were being met. It was generally considered that there were great potentialities present in this group of students but that they had little opportunity to have their own thoughts come to any logical kind of conclusion. The students frequently would present differences of opinion that had been brought up by instructors in other courses, but in the main they seemed to be able to accept that they, themselves, would have to strike a balance and develop manners of approach appropriate for their own personalities.

The nonmedical instructors were often troubled that there was so much sensitivity in the students but that it was concealed behind a facade of indifference. It need only be pointed out that during the course of medical instruction there are many things that are not pleasant. Certain experiences in anatomy, pathology, obstetrics, and pediatrics are frequently painful and unpleasant. The student must learn to cope with the anxiety which may be engendered. One way of handling this is to develop a type of indifference. Realizing this, it seemed helpful to many of the students to be able to admit their feelings about these anxieties. They frequently needed to have some reassurance about the role of the

physician, that the physician must maintain control of emotions but that he might recognize that crying, for example, could be therapeutic for the individual, and that he need not feel guilty for having played a part in producing this reaction in a patient. As they were able to admit some of their fears and anxieties relating to people's emotions, it seemed there was a breakdown of defensiveness in many of the students. They might see that not only were there different meanings to be attached to particular forms of behavior but that there also might be different and more useful ways in which one might cope with a particular situation. Others would see this in relationship to themselves.

SUMMARY AND CONCLUSION

A scheme for attempting to teach non-pathological human behavior to a group of senior medical students during their pediatric clerkship is presented. This material was presented by a pediatrician, a clinical psychologist, and a psychiatric social worker. The objectives were limited, and no effort was made to encompass the whole field of human behavior or even a substantial portion of it. Although only subjective opinions are presented, several important objectives would seem to have been achieved.

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An Interprofessional Seminar at the University of Pittsburgh*

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For the past 7 years there has been in operation at the University of Pittsburgh an interprofessional seminar for students of law, medicine, and graduate social work. The seminar was born in 1953 as a result of the interest of a professor in the University's department of philosophy, the late Dr. John W. McCarthy, in promoting discussions of professional ethics and relationships among professions. Primarily as a result of his efforts, representatives of the faculties of the schools of law and medicine were brought together to consider the matter. After several planning sessions, largely devoted to discussion of such things as the scope and form of the meetings, the choice of topics, and the selection of participating students, the first seminar was held in the second semester of the 1953-54 academic year. The participants were six senior law students, six senior medical students, and one faculty representative from each of the schools of law and medicine and the department of philosophy. At the end of that year, the seminar was pronounced a success by all the parti-

cipants, and it was agreed that it should be continued; with some evolutionary modifications, it has been in operation since that time.

PURPOSE OF THE SEMINAR

The major purpose of the interprofessional seminar has been to provide an opportunity for students in the various professions to meet regularly for the discussion of problems of common interest. One of the difficulties in modern professional education is the fact that the intensified program and the technical nature of the material tend to produce a constricted student, highly trained in his own professional field but only dimly aware of his relation to other professions, to the community, and to the world about him. Simultaneously, the need for the use of the cooperative approach to professional problems is becoming more apparent. This is particularly true in medicine, where so many community health problems require the combined efforts of persons in various professional fields. The individual physician is in no position to provide comprehensive health care for the community single-handed. He must learn to seek the services of others and to work with them to attack common problems.

Recognition of these facts encouraged the members of the faculty to support the development of the interprofessional seminar. Through it, professional students in different fields, at comparable levels of intelligence and training,

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were brought together for discussion. It was hoped that they would thus broaden their interests and perspective and learn to respect the opinions of others.

PARTICIPANTS

As noted earlier, the original participants were senior medical and senior law students, with one faculty member from each school and one from the department of philosophy. In the seminar's second year, students and faculty from the graduate school of social work were added and have remained as regular participants. From time to time, representatives of the graduate school of public health and the school of dentistry have also attended. It is important that the students be of comparable age, intelligence, and level of professional training; mutual respect and understanding seem to be more readily achieved under these circumstances.

Participation has been entirely voluntary, although in some instances it has been by invitation. At the beginning of the academic year, the idea of the seminar is presented to the senior class in each school, usually by the faculty participant from that school. Students are then asked to sign up and to express preference for first or second semester participation, since the makeup of the group is usually changed at that time. About 25 per cent of each class has expressed interest in the seminar, although the number actually participating has usually been somewhat less than this. The total number in any one group is limited to approximately twenty. When sufficient interest is shown, two sessions of the seminar are operated simultaneously.

Faculty participants and occasionally invited "experts" are intended to serve as sources of information and to help to direct the discussion into particularly fruitful areas. Although their enthusi-

asm sometimes runs away with them, they have all recognized the importance of letting the students do most of the talking.

FORM AND NATURE OF THE SEMINAR

The seminar is held one afternoon each week for one semester and is scheduled to run for 1½ hours, typically from 3:30 to 5:00 P.M. Participants usually sit around a large table, in the law school library, although various other forms of assembly have also been used, including regular meetings in a local tavern, tried for one year. While a chairman, or presiding officer, is usually designated, the atmosphere is one of informality, and free discussion is encouraged. Topics for discussion are chosen by the participants, the opening session usually being devoted to consideration of the various possibilities. At the close of each session, the topic for the next week is selected, and one man is assigned to prepare introductory material. Typically, this introduction occupies 10 or 15 minutes and serves to raise questions which occupy the group for the remainder of the period.

Considerable time has been spent by the faculty members over the years in trying to develop the best pattern for conducting the meetings. We have come to the conclusion that this must be determined by the actions and reactions of the participants and that no standard approach will be uniformly successful. The best seminar in which we participated personally operated almost completely without structure. No formal topics were assigned, the group depending rather on the chance appearance of a timely subject based on the reading habits of the participants. Each week the first arrivals would begin to discuss something which one of them had read, perhaps in the daily newspaper, and each additional person as he joined the group

would enter the discussion freely. Invariably these sessions ran well past the scheduled 5:00 P.M. closing hour, and it seemed that the members could hardly wait to resume the talks the following week. The faculty members were convinced that this was the ideal pattern for all future seminars and that formal structuring and assignment of topics served only to stifle free discussion and to inhibit the thinking of the students: The next year we confidently explained the system to the new group of students and then sat back to watch the seminar bloom. The results were extremely painful. The group stumbled awkwardly about trying to find something with which to identify. After three or four sessions had gone by and the group was still floundering helplessly, we came to the reluctant conclusion that formal assignment of topics and predetermined structuring would be necessary. The personalities of the participants were such that they were simply incapable of the spontaneous enthusiasm which the previous group had shown.

Experience has shown that there are rarely two consecutive groups which prefer to operate in the same way. One year the seminar became interested in philosophy and used Plato's *Republic* as the basis for a whole series of discussions, but the succeeding group showed absolutely no interest in such an approach. Whereas this inconsistency was a little discouraging to the faculty members, we learned in time not to worry about it. Time has verified the impression that the form of the seminar and the nature of the subject material are of secondary importance. The primary requisite is to get professional students to explore together areas of common interest in an effort to promote mutual understanding. Only when the discussion flows freely are such objectives achieved.

It should be made clear that the semi-

nar does not attempt to sit in judgment, to arrive at far-reaching decisions, or to solve problems. Questions are asked, problems are explored, opinions are given, but no judgments are rendered. It is left for each man to improve his thinking and understanding and to arrive at whatever decisions he finds suitable.

TOPICS FOR DISCUSSION

As indicated in the foregoing, the specific nature of the subject material has varied widely, depending upon the interests of the participants. However, there are certain subjects which have been almost uniformly popular and which seem to lend themselves particularly well to discussion by law, medicine, and social work students. The topics "abortion," "birth control," "euthanasia," and "artificial insemination" have been standard in almost every seminar, for rather obvious reasons; not only do they pose rather immediate problems for the lawyer, the physician, and the social worker, but they also lead to philosophical discussions of religious, ethical, and moral ideas which are an excellent stimulus to the thinking and understanding of the participants.

"Professional codes of ethics" has been another popular topic. Here the faculty has usually tried to guide the discussion to the underlying principles of ethical codes rather than to the details of the codes themselves. Often, however, this is best done by the introduction of a specific case involving the violation of one of the canons of the American Bar Association's or American Medical Association's codes. From the details of the individual case one can lead to general statements of principle and to underlying philosophy. In most of the discussion groups, the practice of proceeding from the specific to the general has proved more popular than the reverse, perhaps because teaching by case report is a pres-

ently accepted method both in law and medical schools.

One topic frequently leads very naturally to another in such a seminar, and we find that it is a short step from "professional codes of ethics" to "the reputation of the professional man," "the professional man's position and responsibility in the community," "safeguarding and 'policing' the professions," etc. As an example of how such progression may occur, consider the following. In 1957, there appeared in a medical journal a case report of a woman who experienced intermittent abdominal pain following a hysterectomy. After 18 years and two exploratory operations, by two different surgeons, a flat film of the abdomen revealed a large retractor in the peritoneal cavity. The retractor was removed at another operation, the patient made an uneventful recovery, and was afterward symptom-free. Immediate questions raised by the case included such as:

1. Should the last physician have informed the patient of the cause of her symptoms?

2. Should the last physician have pointed out to the patient the apparent negligence of the first physician who left the retractor in the abdomen and of the other two who failed to use routine diagnostic procedures and did not find it?

3. What were the patient's legal rights to recover damages?

Additional questions raised by natural extension included:

1. What do the various codes of ethics say about the reporting of a professional man's negligence by another professional man? Why?

2. In general, should negligence be reported to the patient or client, to the professional man guilty of the negligence, to the medical society, bar association, or to some other group?

3. What role do codes of ethics play

in establishing and protecting the reputation of the professional man?

4. Should professions be "policed" from within or by outside agencies or both?

5. What present mechanisms exist for "internal policing" in the various professions? How do these affect the reputation of the professional man?

6. What is the present reputation of the professional man in today's average community? Is it improving? If not, how might it be improved?

Another popular topic with most seminar groups has been "the narcotics problem." It has been introduced by the specific question, "Do our present narcotics laws increase narcotics addiction and illegal drug traffic?" The discussion is usually prefaced by a brief review of the narcotic drugs and their actions by a medical student and of the present narcotics laws in this and other countries by a law student.

Frequently subjects have been "dropped in our lap" by widely publicized current events. In 1957, when Benny Hooper fell down a well in Long Island, he attracted world-wide attention through newspapers, magazines, television, and radio. He also provided the interprofessional seminar with a very lively topic for discussion which has been used annually since that event. The entire subject of a professional man's fees and the concept of fee-for-service were immediately brought to attention in a forceful and dramatic way. Similarly, the United Mine Workers' disputes with district hospitals, physicians, and the county medical society have made front-page news frequently in the past few years in Pittsburgh. The seminar has eagerly attacked the problem of "third party interests in professional relationships," using the U.M.W. problem as a base. A very popular television program of last season devoted considerable time to the world's

population problem and the seminar very shortly "followed suit"; this topic leads very naturally into other time-honored ones, such as "is human life the greatest value" and "the rights of the individual in relation to the common good."

There is, therefore, no lack of subject materials. One group may choose to discuss criminal responsibility from the legal and the psychiatric point of view. Another may be intrigued by the factors in a multidisciplinary approach to health care. All are usually interested in the problems of marriage and divorce and the solutions offered by the family court. One can hardly read a newspaper or news magazine without coming across something which would be suitable grist for the interprofessional seminar's mill, and we have accumulated a voluminous file of reference materials for topics over the past few years. As noted before, however, the topic itself is secondary; the important thing is to get the students to talk, to exchange experiences, to match wits, to air their prejudices and superstitions, and to learn to understand one another. As long as the topic is of interest and has some bearing on the professional fields of the participants, it will be satisfactory for the purpose.

BENEFITS

Most of the benefits have already been referred to, either directly or indirectly. They can be summarized as the development in professional students of increased breadth of understanding of their professions and of their responsibilities as professional men; simultaneously there comes improvement in respect for and relations with other professions. Changes in the attitudes and comprehension of the students are usually clearly evident as the discussions proceed through the year. At the beginning of each new session, the predominant atmosphere is one of suspicion and distrust.

Law students, medical students, and social work students group together in little clusters, as though for protection against one another. The lawyers sneer at the medics and characterize them as "quacks" who are out to fleece the public. The physicians mutter darkly about the "damned barr'sters" and use the term lawyer synonymously with politician or crook. Both groups tend to look down on the social workers as inferiors, and they in turn are either hesitant and shy or resentful and aggressive. Initially, when a question is raised, the students of one school usually support each other, putting up a united front against the enemy; group accusations are common, with two of the groups banding against the third, but with very little crossing of "party lines." As the year goes on, the ice is gradually melted, and the barriers are broken down. The personalities and beliefs of individuals emerge, and group loyalties are largely forgotten. Frequently a medic and a lawyer will take a position and be opposed by another medic and a social worker and another lawyer. Individuals from different groups sit together as friends and frequently carry their friendships and associations into their private social lives. There is developed a general and genuine effort to understand the other person's point of view. Increase of respect and loss of suspicion are striking.

The benefits are partially visible even in persons who do not directly participate in the seminar. Not infrequently we have been approached by students not in the seminar who wish to ask questions about some of the topics considered. It is obvious that some of the value rubs off on others in each class.

PROBLEMS

The chief problems have revolved around the number of participants and their regular attendance. The very

crowded medical school schedule has no free time in it for seniors at our school. Whereas the seminar has been formally authorized by our curriculum committee as an approved elective activity, the student who participates must still make up his work at some other time, and this does not particularly appeal to him. Since there is no separate credit allowed for participation, and since attendance is entirely voluntary, he is likely to think twice about leaving his clerkship early on a busy day, particularly when the chief resident who is his immediate supervisor does not believe in such foolishness as consorting with lawyers and, of all things, social workers! Attendance is therefore spotty in some years, and this detracts from the value of the individual sessions appreciably.

Equally serious is the fact that the seminar does not actually reach those who need it most. The students who participate are usually the most enlightened in the class as far as breadth of interest is concerned. The seriously constricted student rarely volunteers for an experience such as this.

Several "gimmicks" have been tried in an effort to stir up interest among the students. Newspaper articles have been written locally about the seminar, with favorable comments. A portion of one session was televised over the local educational station one year; although the participants were much too nervous and self-conscious to carry on free discussion, the broadcast did heighten interest and stimulate attendance that year. Occasionally local or out-of-town experts are brought in as consultants on special topics. While more of this could probably be done to advantage, there are certain dangers inherent. Frequently the "ex-

pert" is unwilling to subvert himself to the pattern of the seminar and expects instead to be allowed to deliver a long lecture or at least to monopolize the discussion; a little of this is permissible, but too much would kill the spirit of the seminar entirely.

FUTURE DEVELOPMENT

We hope in years to come to continue the seminar and to expand its influence. Ideally there should be participants from other professional areas in the university; graduate students in philosophy and psychology might be logical additions, for example, and some have suggested that even such benighted heathens as engineers should be included! We could probably stimulate interest and improve the seminar somewhat by the more intelligent use of the visiting expert. We also need to seek some better method of freeing our students from their other obligations to permit their more regular unrestricted attendance. In any event, all the faculty participants are definitely persuaded that the interprofessional seminar has been of real value and should be continued. We recommend the adoption of a similar program at any other institution which might be interested in it.

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The Teaching of Social Medicine in British Medical Schools*

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A report on the teaching of social medicine in British medical schools was prepared from information received by means of a questionnaire sent to individual medical schools. The questionnaire was in two parts: (a) Factual information was sought regarding the official courses in social medicine included in the medical curriculum of the individual schools. (b) Student opinion on and reaction to the teaching which they had received in this subject was obtained. Detailed replies were received from seventeen medical schools.

FACTUAL INFORMATION ON THE TEACHING OF SOCIAL MEDICINE

Teaching methods.—A regular course in social medicine was provided in fourteen of the schools completing the questionnaire. The number of lectures given, each of 1 hour's duration, varied between 60 and 10, with a mean of 33.

In thirteen schools various visits were arranged as part of the course in social medicine. The visits arranged varied considerably from school to school. In some only a visit to the local Public Health Department was arranged, whereas in others a much larger choice was available. Geriatric wards, infectious disease hospitals, health centres, factory works and canteens, schools for mentally and

physically handicapped children, sewage works, rehabilitation units, child welfare clinics, ice cream factories, kitchens and slaughterhouses, coal-mines, and sub-fertility clinics were some of the places visited. In addition, many schools arranged for the students to attach themselves to the district nurse, the health visitor or the almoner and with them to visit patients in their own homes.

Examinations in Social Medicine.—Five of the schools indicated that no examination of any kind was held in social medicine. A further two held a class or terminal examination only on completion of the course.

In ten schools social medicine formed a part of a degree examination. Four schools had a professional examination in social medicine, this being held as part of the 4th Professional during the 5th year of the medical course. In three schools social medicine formed part of the final examination, a 3-hour written paper and an oral being required. In a further three schools social medicine was included as part of the final examination, in that one question on this aspect of medicine was asked in the final written papers.

Subject matter of the courses.—At the majority of the schools the course in social medicine consisted of three main parts, with emphasis being placed on aspects of: (a) epidemiology, (b) sociology, and (c) the health and welfare services.

In epidemiology emphasis was placed on the importance of world health, the

* *Precis prepared from the official Report on the Teaching of Social Medicine in British Medical Schools*, published by the British Medical Students' Association, Tavistock Square, London, W.C.1., England.

† British Medical Students' Association's Education Officer, 1958-59.

spread of disease internationally, and the effect of environment and geography on certain specific diseases. In this context, as well, the preventive aspects of world-wide diseases were emphasized in some schools. The hazards of radiation and of industrial medicine were brought before the student, and demographic trends were outlined. National epidemiology was also emphasized, and the importance of the prevention of spread of diseases, and of the investigation of an outbreak of a disease was brought before some schools. Of the fourteen schools having a social medicine course, nine indicated that epidemiology had been taught as such. It is interesting to note that two out of the remaining five indicated the students' dissatisfaction that only a little emphasis had been placed on this very important topic.

Medical sociology was mentioned as forming part of the course at most schools. Under this the class patterns of diseases, the effects of environment and nurture on disease and health, and their control were placed before the student.

Public health administration was referred to in all schools. In some the course outlined the development and evolution of the medical and welfare services. In others only the present position with respect to the National Health Service and the Local Authority Health Service was outlined.

Three schools indicated that the course in social medicine had been so arranged as to emphasize the differences between individual and group medicine and, thereafter, the differences between national and international medicine. International health administration was outlined, and the students were familiarized with the workings of the World Health Organization and other similar bodies.

In addition to the above-mentioned aspects of the course some schools included a number of lectures on such

topics as air pollution, housing, water supplies, town and country planning, and sewage disposal. The social aspects of aging and the difficulties of rehabilitation were also outlined in a number of schools.

DISCUSSION ON THE FACTUAL INFORMATION

The General Medical Council in their "Recommendations as to the Medical Curriculum, 1957," stated: "During his study of all clinical subjects the attention of the student should be continuously directed by his teachers to the importance of the inter-relation of the physical, psychological and social aspects of disease..."

The importance of the social aspects of medicine is something which has been recognized ever since medicine came to be practiced. Although it has only been in recent years that actual statistical evaluation of the role of social factors in the causation of disease has been carried out, it is true that long before this the effect of nurture and environment, of social status, and of general hygiene on disease were well recognized.

The student working in hospital and seeing each case as an emergency or as a case requiring hospital treatment which is best given under supervision and where proper facilities are available—the student in this position is likely to get a very wrong impression of his patients. He fails to see them against their social background, their home conditions, their environment, and as a member of a much larger community. He may well adopt an attitude of mind in which he notes the date of admission, the treatment and progress during the patient's stay in hospital, and then the date of dismissal. It is too easy to forget that social factors may have had a part to play in being responsible for the patient's admission in the first place and that these factors will again come into

play on his dismissal and this to the detriment of the treatment he received in the hospital. The difficulties of rehabilitation in those cases receiving permanent injury or disablement may also escape the student in the teaching hospital.

Not only is it a case of reminding the student of the important social aspects which affect the hospital patient, but perhaps it is even more important to remind the student of those aspects of preventive medicine which help to counteract disease and thus keep people outside hospital beds. The importance of proper sanitation, food and water hygiene, vaccination and inoculation, and the prevention of industrial hazards are all too seldom brought before the undergraduate, and yet these are aspects which are the immediate concern of doctors and medical officers of health. To this end, therefore, it is necessary that in his undergraduate career the student is made aware of these facets of medicine which eventually he will come up against.

The major health problems, national and international, are also topics to which the undergraduate should certainly be introduced. Our claim all along has been for a broader and more general undergraduate medical course. Far too often the newly qualified doctor finds that his training has been along too narrow limits, he has not been given a true perspective of the broad field of medicine, and his views and outlooks are much too parochial. The student should be made to realize that his contribution as a doctor will not be a local one, will not be a national one, but should become an international one, in that his services are part of a world-wide medical service.

Each newly qualified doctor in the country on taking up his first pre-registration post has become a serving member of our National Health Service. It would appear to our Association that

members of any profession ought to have a working knowledge of that service in which they find themselves, its administration and the services which it supplies. It therefore follows that the undergraduate student should be made familiar with the administration of our National Health Service, and should be made cognizant of those different health and welfare services which are at his disposal on becoming a fully registered practitioner.

In the light of those comments let us examine the present position in those schools which have supplied us with information. Three schools indicated that no teaching in social medicine was given at all. The number of lectures given varied from 0 to 60, but it is worth noting that the average figure in those schools having a series of lectures is as high as 33. In addition to a course of lectures, some schools also arranged tutorials and/or discussion groups. However, the most common and most interesting ancillary teaching method used was the arranging of visits. Thirteen schools indicated that some visits had been arranged as part of the social medicine course. These included visits to industrial works, canteens, public health centres, geriatric units, special schools, special clinics, and also individual student visits to patients' homes with the district nurse, the health visitor, or the almoner. With but one exception, the students in those schools arranging such visits, were unanimous in their approval, and agreed that in this way they had been given insight into many of the social problems of medicine and into the workings of the auxiliary health services.

The subject matter taught in the different schools can be roughly subdivided under the three headings, Medical Sociology, Epidemiology, and National Health Service Administration. The majority of schools included lectures on

these three aspects, but with some variation on the amount of detail given. We have previously emphasized that these three aspects were indeed the ones which we consider should be brought before the undergraduate, and it is satisfactory to note that so many schools in fact included lectures on these topics in their social medicine course.

Only a minority of schools included any lectures or mention of the international health service organizations. It would seem that the series of lectures on epidemiology could well be used to indicate the liaison which exists between different nations for the prevention of disease and its spread. In addition, the lectures devoted to our own National Health Service could also be used to bring before the student the workings and administration of such bodies as the World Health Organization, and in this way we feel that the role of the British Health Service as part of a world-wide health service would be better appreciated.

In general it would appear from our survey that at most schools the student is given some insight into the social aspects of medicine but that there is a great deal of variation in the amount of detail taught. The importance which the student attaches to a course in social medicine must be discussed before outlining our recommendations, and this will be dealt with in the section on student opinion.

STUDENT OPINION ON THE TEACHING OF SOCIAL MEDICINE

Value attached to course.—The replies to this question can best be classified into those schools which attach great value, some value, and little value to the course at their schools. On this basis two schools attached great value, six attached some value, and four attached little value to the social medicine course at their respective schools.

The two schools attaching great value to the course had had a large series of lectures on social medicine and in addition an interesting and extensive number of visits had been arranged. Of the four schools attaching little value to the course, three had had only a very abbreviated course, whilst the fourth had had a lengthy course with an above average number of lectures. The latter school's criticism of the course was based on the grounds that the wrong emphasis had been placed, and the visits arranged had not really been conducted so as to bring out to the students the medical aspects of importance.

Changes which the student would like to see introduced.—All schools were asked to indicate what importance they attached to a course in social medicine as part of the teaching in undergraduate medicine. The replies to this question indicated that ten schools considered it to be of great importance that the student be given an insight into those social aspects which affected the community's health. Five schools were not of the view that social medicine ought to be given a prominent place in undergraduate education, and opined that the different aspects taught could well be integrated with other subjects.

The reasons why we consider that teaching in social medicine is important have already been outlined in the discussion on the factual information. The reasons given there were essentially those advanced by these ten schools attaching great importance to the teaching of social medicine. One school emphasized that it was essential that the undergraduate should come to realize that all the problems in medicine were not clinical, and to this end it was necessary that he be given some background knowledge of the society in which the patient lived and of the sociological factors which pertained to each individual. Furthermore,

it was suggested by the same school that no other subject in the clinical curriculum offered the undergraduate a better opportunity to think for himself and to see how, as a doctor, he was not merely a person who diagnosed and treated but also a member of the community who would be required and should be able to advise on matters which were in a way only indirectly connected to clinical medicine. The teaching in social medicine should indicate to the undergraduate the relationship of disease not only to the individual but to the community as a whole, and because of this it was felt it was of great importance.

Those schools attaching little importance to teaching in social medicine felt that this was a subject for postgraduates and that, as far as the student was concerned, the important aspects could best be taught as integral parts of certain clinical subjects. It would appear that some schools felt that a detailed knowledge of Public Health was not, in fact, necessary for the newly qualified doctor. It was regarded as a postgraduate subject and therefore as a specialty in which any interested graduate could decide to specialize.

The suggested lines along which integration could be introduced were as follows: Epidemiology could be taught as part of the course in bacteriology. The preventive aspects of disease, together with the importance of social factors, could be emphasized in the course on infectious disease, and with this knowledge the student would be in a position to appreciate the importance of medical sociology. In addition, the social history of each clinical case ought to be brought before the student, and contributory social factors could be emphasized in the bedside teaching. No suggestions were made as to what integration would be possible in order to inform the student of the administrative side of the National

Health Service, and of those auxiliary services on which the doctor can call. One school was of the opinion that a knowledge of this was of no immediate concern to the students. We would agree with this to some extent, but the basis of undergraduate education should be such as to indicate to the student what will be expected of him as a doctor, and therefore he is required to familiarize himself with aspects which will be his immediate concern on registration. In this sense undergraduate medical education must be essentially prospective.

It would seem to us that, although social medicine in some of its aspects could well be integrated with some other of the subjects in the clinical curriculum, it ought still to have such a position of importance in the curriculum as to merit its being taught as a separate entity. However, we would suggest that undue prominence should not be given it to the exclusion of other more important subjects. Those schools having no set course in social medicine indicated that it was the students' opinion that teaching in social medicine ought to be given, but that its importance was not such as to merit its being included as a subject for examination in the finals or as a subject for an individual professional examination.

Our final recommendations, therefore, are ones of compromise, so that the strong minority view among the schools is given consideration. We are of the opinion that social medicine ought to be taught as an individual subject. The course ought not to be too detailed, but should serve to give an insight into those three aspects which we have already outlined: epidemiology, sociology, and the administrative and auxiliary service of the National Health Service. In addition, more emphasis should be placed on the social aspect of clinical cases in the wards.

The standard of knowledge required ought not to be such as would make social medicine a subject in the final examination. In our opinion examinations are necessary in order to ensure that the student is sufficiently familiar with a certain subject. The question whether social medicine ought to be included in a professional examination remains a difficult one to decide from the opinions which we have received. It would appear to us that an integrated examination in social medicine and infectious diseases would meet the requirements which we consider necessary, and this tentative suggestion is therefore made.

With reference to the teaching methods used in social medicine, all schools were in favour of having visits arranged. It was felt that without such visits social medicine would not otherwise be real. Not only should there be visits to clinics, factories, kitchens, and so on, but in addition an effort should be made to arrange for the students to visit patients in their own homes, either with the general practitioner or with almoners or health visitors. In this way the importance of social medicine will, we feel, be made self-evident to the undergraduate, and this is what the undergraduate himself desires.

SUMMARY OF RECOMMENDATIONS

It is recommended that:

1. In all schools a course of social medicine should be included as part of the teaching in undergraduate medicine.
2. The course in social medicine should serve to give an insight into those aspects which will be of immediate concern to the newly qualified doctor. We consider that those aspects of importance include (a) medical sociology, (b) epidemiology, (c) public health administration, (d) the health and welfare services.
3. Social medicine should not be included as a subject in the final examinations. It is tentatively suggested that a combined examination in social medicine and infectious diseases could form part of a professional examination.
4. Arranged visits to factories, kitchens, special clinics, and to patients' homes should be included as part of the course in social medicine.
5. In the teaching in social medicine emphasis should be placed on the importance of disease, not only to the individual but to the community as a whole.

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The Teaching of Psychiatry in British Medical Schools*

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A report on the teaching of psychiatry and psychological medicine in British medical schools was prepared from information obtained by means of a questionnaire sent to individual medical schools. The questionnaire was in two parts: (a) Factual information was sought regarding the official courses in psychiatry included in the medical curriculum of the individual schools. (b) Student opinion on, and reaction to, the teaching which they had received in these subjects were obtained. Detailed replies were received from seventeen medical schools.

FACTUAL INFORMATION ON THE TEACHING OF PSYCHIATRY AND PSYCHOLOGICAL MEDICINE

A regular course in psychiatry was provided in all the seventeen schools which completed the questionnaire. The number of lectures given, each of 1 hour's duration, varied between 52 and 10, with a mean of 26. In eleven of the schools the course of lectures included lectures on normal psychology, the number of such lectures given ranging between 12 and 4, with a mean of 8.

In four schools ward rounds in psychiatric wards were included as part of the course, the number of rounds ranging between 16 and 7, with a mean of 11. At-

tendance at out-patient clinics was compulsory in twelve schools, with the number of sessions to be attended ranging from 26 to 4, with a mean of 10.

In addition to these teaching methods a number of schools provided lecture-demonstrations in which selected cases were demonstrated, together with a discourse on the different forms of treatment, and in others compulsory clerking of a number of psychiatric patients was included as part of the course.

In no school was there a period of compulsory residence in a mental hospital, although some did provide, and encourage, voluntary residence for a limited period. The number of students which took advantage of these facilities, however, proved to be small.

Examinations in psychiatry.—Five of the schools indicated that no examination of any kind was held in psychiatry. A further four had only a class or terminal examination on completion of the psychiatry course. Three schools, in addition to a terminal examination, also included an oral examination in psychiatry as part of the final examination for medical degrees, and in this a psychiatrist examined. One school included a clinical examination in psychiatry in the finals. Two schools included a compulsory question in psychiatry in the final written paper in medicine. In only one school was there a professional or degree examination in psychiatry.

Preclinical teaching of psychology.—In all of the eleven schools providing lectures on normal psychology, these lectures were given in the preclinical terms

* *Precis prepared from the official Report on the Teaching of Psychiatry and Psychological Medicine in British Medical Schools, published by the British Medical Students Association, Tavistock Square, London, W. C. 1. England.*

† British Medical Students' Association's Education Officer, 1958-59.

in conjunction with the teaching of anatomy and physiology. The subject matter covered in the preclinical courses was mainly human behavior, its development and application to psychiatric illness, the development of the mind from childhood, psychomatic methods, and association therapy.

Subject matter of the courses in psychiatry.—At the majority of schools the courses in psychiatry were arranged to cover the more common mental disorders. The psychoneuroses, the psychoses, mental deficiencies, and aspects of child psychiatry appear to be given prominence at all schools. In those schools where the course in psychiatry was an abbreviated one, emphasis was placed on the psychoneuroses and the more common mental aspects which might confront the doctor in general practice.

In those schools with more available time for the teaching of psychiatry the course also included lectures on the psychology of illness, methods of treatment including psychotherapy, doctor-patient relationships, and on the role of mental mechanism in physical disease.

Only five schools specifically indicated that reference was made in the course to the social and medico-legal aspects of psychiatry. Two schools indicated that emphasis had been placed on the importance of social background as a cause of mental illness and that, in this context, time had been devoted to the types of neurosis which most commonly confront the general practitioner or the clerk at the out-patient departments of hospitals.

At some schools little emphasis appears to have been placed on psychotherapy, and, as will be indicated later, the students were of the opinion that this ought to figure more prominently in a course on psychiatry, in that the family doctor may in the first instance be the person who might be able to give some psychotherapeutic advice to his patients.

Discussion on the factual information.

—The General Medical Council, in their "Recommendations as to the Medical Curriculum—1957," stated: "Instruction should be given in the elements of normal psychology . . . During his study of all clinical subjects the attention of the student should be continuously directed by his teachers to the importance of the inter-relation of the physical, psychological and social aspects of disease . . . Instruction in Psychological Medicine should be carried out mainly in a psychiatric department, where neurosis and psychoneurosis can be studied, and should include demonstrations at a Mental Hospital and at a Mental Deficiency Institution."

These, then, are the broad lines on which the teaching of Psychiatry and of Psychological Medicine ought to be based, and our Association wholeheartedly endorses this. In recent years there has been a growing realization and appreciation of the important part which the psyche has to play in the causation of physical diseases. The importance of psychosomatic medicine has been realized by many of the far-seeing physicians and clinical teachers, and they have endeavored to insure that the present-day student of medicine is being kept abreast of the advances in this field. It would appear, however, from the information which we have received for this report that there is still a failure to give psychiatry and psychological medicine their correct places of importance in the medical curriculum.

Out of seventeen schools completing our questionnaire, six indicated that no teaching in normal psychology was given. The courses in physiology at our medical schools aim at providing the medical student with a basic yet fairly detailed knowledge of the mechanisms and functions of the normal body. It is claimed that only with a knowledge of the normal

can the student be expected to grasp and understand the abnormal patterns which arise because of disease, and in view of this claim our physiologists are wont to emphasize that physiology forms the basic and fundamental subject in the whole of the medical curriculum. This is undoubtedly a strong claim, but one which is not far from being true, if in fact it is not the truth.

If one bears this concept in mind, then, it would seem reasonable to assume that a true knowledge of psychiatry can best be obtained only if the student is first given some instruction in normal psychology. It seems futile to stress a holistic approach to the patient, if in fact we are not also going to stress a holistic approach to the normal. We would therefore recommend that a course in normal psychology should form part of every medical student's training, and that as far as this was found practical such a course ought to be given alongside the preclinical subjects—i.e., anatomy and physiology.

A survey of the courses provided at the seventeen schools seemed to indicate to us that there was a great need for increasing the amount of time spent on the training of students in psychiatry. The most apparent deficiency in the courses provided was in the amount of time given to clinical teaching, and this deficiency was not lost on the students themselves.

Study of the new course in psychiatry and psychology recently introduced at Sheffield University made us believe that the "Sheffield Plan," as we hereafter refer to it, was one which took cognizance of the changing face of psychiatry and was a far-seeing plan which would ensure that the student would receive a thorough basic training in psychiatry during his medical undergraduate education. Details of the "Sheffield Plan" are here included, and it is recommended

to the attention of clinical teachers, in the belief that herein has been made an effort to meet the requirements which, we, the British Medical Students' Association, feel are necessary for an adequate undergraduate training in psychiatry.

The advantages of the plan which we felt were to be recommended were briefly:

1. It included a course in normal psychology.

2. Different aspects of psychiatry were to be dealt with throughout the clinical course in medicine, thus emphasizing that psychiatry should be regarded as an integral part of clinical medicine. This appeared to meet the recommendation of the General Medical Council that:

During his study of all clinical subjects the attention of the student should be continuously directed by his teachers to the importance of the inter-relation of the physical, psychological and social aspects of disease . . .

3. It included compulsory examinations in psychiatry, and the introduction of a final examination in "Medicine including Psychiatry" was to be recommended, as a further step in the correct appraisal of the importance of psychiatry in medical training.

The "Sheffield Plan."—

Preclinical: Ten psychology lectures by the Head of the Psychology Department; three to six Lecture Seminars on normal and abnormal psychology with patients.

Clinical: One introductory lecture in Introductory Clinical Course (3rd year), two social psychiatry seminars as part of the social medicine clerkship (4th year). Clerkship in the Department of Psychiatry as part of a neurology-psychiatric clerkship of 1 month (4th year). Weekly ward rounds by the professor of psychiatry in the medical wards with junior and senior medical clerks (4th and 6th year). Two lectures to midwifery-

obstetric students (5th year). Weekly lecture demonstrations in mental hospitals (6th year—two terms).

Examinations: There will be one obligatory question in psychology in the physiology paper in the 2nd M.B.

There will be a voluntary examination and a prize examination in psychiatry in 5th year.

The final examination in medicine will become an examination in "Medicine, including Psychiatry," and the professor of psychiatry will examine with the professor of medicine. There will be one or two obligatory questions in the medical paper, and *probably* an obligatory clinical examination in psychiatry.

STUDENT OPINION ON THE TEACHING OF PSYCHIATRY

Value attached to course.—The replies to this question can best be classified into those schools which attached great value, some value, and little value to the courses at their schools. On this basis six schools attached great value, four attached some value, and five attached little value to the psychiatry course.

Further examination of these results indicated a correlation between the value attached to the course by the student and the amount of time spent on the teaching of psychiatry. In those schools attaching great value to the course, the number of lectures given were above the average number for the seventeen schools, and in addition greater time had been devoted to the clinical teaching. The five schools attaching only little value to the teaching had received only a short course in psychiatry.

All schools in their replies emphasized that the students were keenly aware of the need for a prominent place being given to the teaching of psychology and psychiatry in a medical education, from the point of view of its being both a useful part of medical training and also

a part of a general education. Several schools made the point that, as a result of attendance at medical out-patient clinics, the students had come to realize that a large number of patients attending these clinics were in fact suffering from mild neurosis or psycho-neurosis. Consequently, they deduced that the doctor in general practice must be faced with a large number of such patients, and it was felt that the undergraduate course in psychology and psychiatry ought at least to give some insight into what was normal and what was abnormal and ought to have emphasis on the psychiatric cases which can be seen in general wards and in general practice.

The outstanding criticism which the students made of the courses was that they felt that a sound and basic knowledge had not been provided, that only a fleeting acquaintance had been made with psychiatric illness, and that consequently as qualified doctors they would not be in a position to appreciate the important relation which psychiatry had with all branches of medicine and the part which the psyche had to play in the causation of physical disease.

In previous reports on medical education it has been emphasized by our Association that we appreciate that undergraduate teaching ought to aim at providing a basic and sound knowledge of the subject matter, and from this the graduate will himself be able by experience to become more of a specialist. Our plea is that in all schools a sound and basic knowledge ought to be given in psychiatry and psychological medicine, so that the student will come to attach great value to his training in these subjects.

Time given to the teaching of psychiatry and psychological medicine.—The replies to this question showed that in only five schools out of fifteen was it felt by the student that sufficient time

had been devoted to the teaching of psychiatry.

These results can be further examined in conjunction with the value attached to the teaching (Table 1).

It is thus apparent that the over-all student opinion is to the effect that insufficient time is given to the teaching of psychiatry and psychological medicine. Even where great value has been attached to the course, the students still feel that further time could be given to it in order that more practical experience could be gained. One school attaching great value to the course indicated that student opinion was that the surface of the subject had merely been scratched. The value of psychiatry as a subject in which the student has often to set more personal questions to the patient and in which consequently he must develop a greater degree of confidence was emphasized by the same school, and it was therefore urged that more time spent with psychiatric patients would prove of considerable value. The general desire on the part of the student is for more time to be spent clinically.

Changes which the student would like introduced.—Many suggestions were included in the replies to this part of the questionnaire, and only a brief summary can be given.

As has been previously emphasized it was urged that more time be devoted to the clinical teaching of psychiatry, and more out-patient work and conducted ward rounds were asked for. In connection with out-patient work it is of interest that a number of schools specifically requested that as far as possible only one to two students at a time should

interview each patient at an out-patient clinic. It was felt that a larger number caused the patient much embarrassment and resulted in a failure to establish a true doctor/patient relationship, with a failure of benefit as far as the student was concerned.

Eight schools recommended that a compulsory period of clinical clerking in psychiatry ought to be introduced, and that for this there ought to be compulsory residence in a mental hospital or unit. In making this suggestion one school emphasized that this was the only way in which the student could really learn how to manage psychiatric patients, and this would be of considerable importance if a new Mental Health Bill were introduced, resulting in the doctor's finding himself responsible for mental cases at a general hospital.

With regard to the subject matter of the course the students felt that this should include the basic and fundamental aspects of psychology and psychiatry; that the more common mental illnesses be demonstrated, and that emphasis be placed on the mental disorders such as the neuroses and psychoneuroses which are more generally seen by the family doctor and in general hospital wards.

The concept of psychotherapy was little dealt with in some schools. It was realized by the students that this might be difficult to teach but that at the same time it would prove of great value if the effort were made.

The social and criminal aspects of psychiatry ought to be given further prominence, and the importance of child psychiatry, probably best dealt with in the course of pediatrics, ought also to be borne in mind.

From a number of schools came the request that psychiatry be taught throughout the clinical course and not just as a special subject to be hurriedly rushed through. The introductory course

TABLE 1

Value attached to course	No. schools	Sufficient time given
Great value	6	2
Some value	4	3
Little value	5	0

in clinical medicine should include introductory lectures in psychiatry, and thereafter psychiatric training ought to be given in conjunction with general medicine, and this as far as possible in general medical wards.

One novel suggestion made and yet one which merits attention was to the effect that each school should have a Chair of Psychiatry. Only in this way was it felt that psychiatry would be given correct recognition both by the general medical teachers and by the students.

Compulsory examinations were suggested by some schools. One school did urge that no examination questions in psychiatry ought to be included in the final examination.

SUMMARY OF RECOMMENDATIONS

It is recommended that:

1. A course in normal psychology should be included in the medical curriculum and that this should be given in conjunction with the preclinical course in anatomy and physiology.

2. The clinical teaching of psychiatry should be arranged in conjunction with the teaching of general medicine so that psychiatry will no longer be dealt with as a separate specialty but rather as an integral part of medicine.

3. Sufficient time be given to the clinical teaching of psychiatry so that the students receive more training at out-

patient clinics and on ward rounds in mental hospitals and units.

4. The emphasis in the teaching of psychiatry ought to be placed on the commonest mental disorders, with special reference to the disorders more often seen in general practice and in general hospital wards.

5. An effort be made to give the student some teaching in psychotherapy.

6. Compulsory residence or a period of clinical clerking be introduced as part of the training in psychiatry.

7. Obligatory examinations in psychology, as part of the 2nd M.B. in physiology, and in psychiatry, as part of the final examination in medicine, be introduced at all schools.

8. Psychiatrists be included among the examiners in the final examination in medicine.

Finally, we would recommend for your attention the newly introduced course in psychology and psychiatry at Sheffield—referred to heretofore as the "Sheffield Plan"—as being a course which embodies many of the recommendations made here.

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MEDICAL EDUCATION FORUM

Editorials

GUEST IN THE HOUSE

A recent inspection of the Visitors Book of the New York Hospital Cornell Medical Center revealed guests from Burma, Australia, Eire, Philippines, West Berlin, Union of South Africa, Iran, Paraguay, Italy, and Wales, as well as many other countries. The flow of foreign scholars to our institutions of medical science is impressive. It is a major program in many medical schools. It is also challenging. What can we do to make the visits of these educational confrères most productive for them, for their country, and for the U. S. A.?

Perhaps a longer stay in a few institutions would be preferable to the jet-propelled transcontinental tours which many undertake. A minimum of 5 days in one school should be applied.

How much briefing does a visitor receive before he launches off on his tour? Certainly many visitors would profit from a few days of program review on a national scale at the time of arrival. Several organizations make a sincere effort to do this—is it enough?

There are printed materials available that should be required reading before the start of the grand tour—annual reports from the A. A. M. C. and the Council on Medical Education, the brochure prepared for the 2nd World Congress on Medical Education, and, with pardonable pride, *The Journal of Medical Education*.

A sufficient number of U. S. medical educators have experience in reasonable depth in specific geographical areas to assure that the visit is in the best interest of problems at home. A continuing effort to develop a visitors' itinerary in line with interest and experience of the host schools would be desirable.

Our guests come in increasing numbers and with increasing interest in medical education. We must be certain that their visit is fruitful for them and for us.

JOHN Z. BOWERS, M.D.

THE UNIVERSITY OF CHILE DECLARES ITS OBJECTIVES*

The Medical School of the University of Chile in Santiago has a distinguished record and a position of eminence in medical education. Many of the faculty members have visited medical schools in the United States; others have held fellowships from the Rockefeller and the Kellogg Foundations for more extended study.

During the recent annual meeting of the A.A.M.C., Prof. A. Neghme, Secretary of the Medical Faculty at Santiago, carried a statement of objectives of the faculty. Since a number of medical schools at home and abroad are grappling with the problem of objectives, the statement from Chile should be of interest to medical educators, international.

DECLARATION OF PRINCIPLES
ON THE PURPOSES OF MEDICAL EDUCATION
(For Obtaining the M. D. Degree)

1. To train physicians of a basic, undifferentiated type, according to the health needs of the country, the evolution of the medical sciences, and the special requirements derived from the scope and responsibilities inherent in the physician's activities and his role in the community, especially of those aspects related to a sound scientific and technical training and to the practice of ethical and humanitarian principles.

2. To enable the student to learn by himself in an active way by stimulating his self-teaching capacity and his aptitudes for developing his judgment and his ability for sound observation and logical reasoning. This attitude should be based on the idea that the student's progress through Medical School constitutes merely a stage of his development which must go on through the rest of his professional life.

3. To achieve a well balanced progression of the different aspects of his training, the rendering of information as well as the handling of the scientific method and of special techniques, which should be rounded off with other character-growth and talent-promoting activities.

4. Therefore, all efforts in medical education should be directed toward helping the student to:

a) understand man in his complex unity, made up by his three main aspects: biological, psychological, and social;

b) obtain well-grounded concepts on the biological meaning of health and disease and an adequate understanding of the scientific method;

c) acquire basic information from each course of lectures, which concomitantly tends to develop mental discipline;

d) develop the habit of systematic study, of work and of the application of scientific methods to the evaluation and solution of medical problems, so as to learn to interpret the results and to apply for the help of specialists, when necessary;

e) promote his attitude of service to the community, of the prevention of disease and of fostering the health of the individual, the family and the whole community;

f) develop an attitude of understanding of the patient's needs and of respect towards his human dignity;

g) acquire and practice the principles of professional ethics;

h) promote his cultural progress.

5. In order to attain the objectives listed above, it will be necessary that the efforts of the whole Medical School serve as an example of first-rate scientific work, of patient attendance, of well adapted teamwork, of respect for the human dignity of others, of well planned sanitary assistance to the individual and the community, and of rational utilization of the resources available.

HERNÁN ALESSANDRI, *Dean*
A. NEGHME, *Secretary*

* Approved at the Meeting held by the Faculty of Medicine on August 12, 1960.

Datagrams*

HOSPITALS, INTERNSHIP QUOTAS, AND THE NATIONAL INTERNSHIP MATCHING PROGRAM: SOME SELECTED DATA

Each year medical educators, senior medical students and hospital administrators await the outcome of the National Internship Matching Program (N. I. M. P.) with considerable interest. The purpose of this datagram is to provide some selected data on two general factors which potentially can have influence on the success of a given hospital in meeting its internship quota through N. I. M. P. These two factors are: (1) the type of hospital (i.e., major teaching hospital, minor teaching hospital or non-medical-school-affiliated hospital) (2) the amount of stipend paid per month by the hospital to the intern.

Before proceeding to the presentation of the data, a few words explaining the mechanism of N. I. M. P. may assist the reader in interpreting the data. "Basically, N. I. M. P. acts as a clearing agency. Each participating student submits a confidential list to N. I. M. P., ranking, in the order of his preference, the hospitals where he has applied for internship. He applies for any internship which interests him. Each participating hospital also submits a confidential list, ranking, in order of its preferences, the students which have applied to it. N. I. M. P. then matches the students with the internship he rates the highest, insofar as the hospital's relative evaluation of the student applicant makes this possible." (1)

A comparison of the major and minor teaching hospitals affiliated with medical schools and non-medical-school-affiliated hospitals in terms of their success in filling their internship positions in 1953, 1958 and 1960 is presented in Figure 1.

Figure 1 indicates that the major teaching hospitals with an annual average of 78% of their positions being filled via N. I. M. P. are the most successful of the three types of hospitals in meeting their requirements for interns. Further, the proportion of filled positions in these types of hospitals has tended to increase over the years from 70% in 1953 to 83% in 1960.

The minor teaching hospitals have met with only moderate success in filling

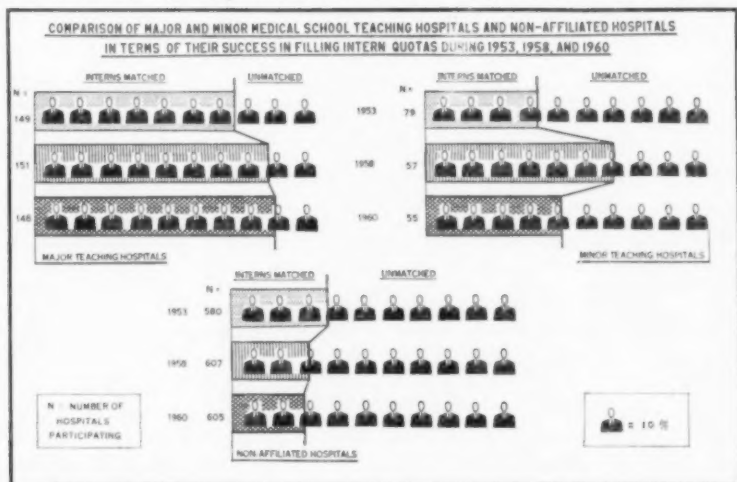


FIGURE 1

(1) Darley, W. The Seventh National Internship Matching Program, *J. M. Educ.*, 24: 38-46, 1959.

*Submitted by the Division of Operational Studies of the AAMC.

their internship positions in that they filled an average of 50% of their positions annually. This type of hospital also showed the greatest variation from year to year in proportion of positions filled (i.e., 38% in 1953, 65% in 1958 and 47% in 1960).

The non-medical-school-affiliated hospital meets with the least success of the three types of hospitals in filling its internship positions. This type of hospital shows an annual average of 26% of positions filled. In contrast to the trend indicated in the major teaching hospital of increasing success over the years in filling positions, the non-affiliated hospital indicates a decline in proportion of positions filled from 31% in 1953 to 22% in 1960.

A second basis for comparison of hospitals as regards their internship programs is the amount of stipend paid to the interns. Comparative data on the success in filling internship positions experienced by hospitals paying various amounts of stipends to interns are presented in Figure 2. The years 1954, 1956, 1958 and 1960 are used as reference points.

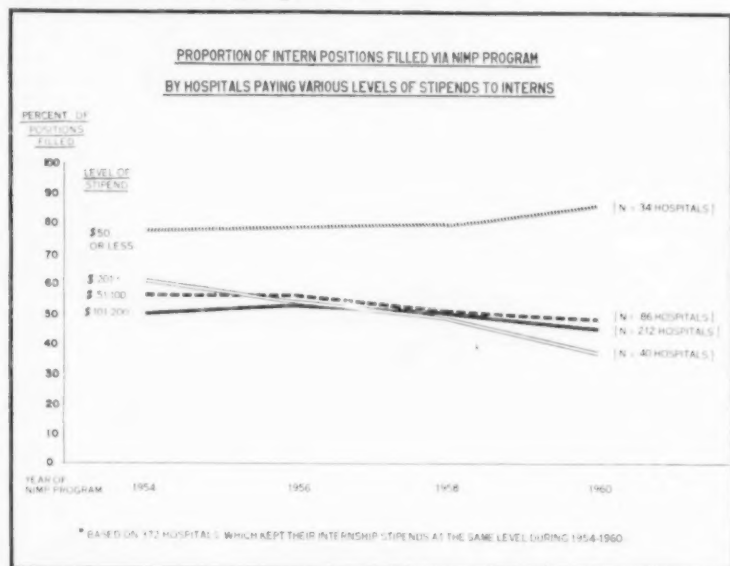


FIGURE 2

One might expect from superficial analysis of the problem of filling internship positions in hospitals that the higher the stipend the hospital paid to its interns, the greater success it would meet in filling its internship quota. The data in Figure 2 indicate that this is not the case. First, Figure 2 indicates that the hospitals paying the smallest amount of stipend (\$50 per month or less) with an annual average of approximately 80% of positions filled are the most successful of the four groups in filling their internship positions. Moreover, these hospitals show a slight trend toward increasing success over the years from 79% in 1954 to 86% in 1960. Among the hospitals in this group 25 out of 34, or 74% are major teaching hospitals.

Each of the other groups of hospitals (i.e., those paying stipends of \$51-100 per month, \$101-200 per month or \$201 or more per month) show an average of roughly 50% success in filling internship quotas during the period 1954-1960. The hospitals paying stipends amounting to \$201 or more per month show a general decline in success in filling quotas from an average of 61% of quotas filled in 1954 to 38% of quotas filled in 1960. Among the hospitals in this latter group, 37 out of 40, or 93%, are non-medical-school-affiliated hospitals.

Addresses

EDUCATION TODAY FOR MEDICINE TOMORROW*

MAURICE B. VISSCHER, M.D., Ph.D.†

The October, 1960, issue of *Harpers* magazine devoted an unprecedented 45-page supplement to what it entitled "The Crisis in American Medicine." In it eight perceptive experts from various backgrounds of experience analyzed aspects of current problems in American medicine, mainly from social, political, and economic angles.

The problems posed in these essays are real and important, but they do not exhaust the list of critical situations regarding 20th-century medicine in our country and the world. In fact, important as the social and economic problems are, they will be solved by the action of inexorable forces operating in our society.

A more subtle problem which cannot be solved by legislative fiat or by the action of economic forces is the one I wish to discuss. The increase in scientific knowledge in medicine is a phenomenon which has revolutionized the practice of medicine in the last half-century and is therefore the main base cause of the various types of crisis in which medicine finds itself. Particularly, this increase in knowledge creates the major problems in relation to medical education.

Medicine is a very complex enterprise today. The individual patient thinks of medicine as the composite of what his physician and his hospital can do for him when he needs medical care. But behind those services is an unseen array of supports which defy easy description. This array includes the structure of the science of medicine, the system of medical education, the pharmaceutical industry, the medical instrument industry, the auxiliary medical services such as nursing, medical technology, and dietetics, the hospital system itself, and other essential supports. I do not propose to deal with more than one of these—medical education—but I want to make it clear that in doing so I am not implying that other problems do not exist. In fact, I should like to invite you to focus your attention on only a few facets of the problem of medical education—those related to the scientific revolution of the 20th century.

My own personal experience in medicine and medical education extends over only 39 years, but I can say that even in that period of time I have seen many common diseases virtually vanish, and especially I have seen chemistry and physics become absolutely indispensable weapons in the armamentarium of medicine.

When I was a young medical student syphilitic vascular disease was an everyday diagnosis in the clinic. Today most students in my medical school never see a case in 4 years. In my day as a medical student juvenile diabetes was invariably a rapidly fatal disease. Today young diabetics have a very reasonable life expect-

* Lecture given by Dr. Visscher on the occasion of his receipt of the Fourth Annual Honorary Lectureship Award of the Albany Medical College of Union University, November 17, 1960, Albany, New York.

† Professor and Chairman, Department of Physiology, University of Minnesota Medical School.

ancy under proper management. In my student days medical chemistry meant analysis of urine for sugar and protein to detect diabetes and kidney disease, about which almost nothing could be done at that time. Today medical chemistry in high-grade routine practice requires facilities for procedures ranging from enzyme activity estimations to radioisotope analyses, with hundreds of more conventional analytical procedures in addition. There may be some legitimate question whether all the elaborate chemical and physical studies performed are always necessary for good medical practice, but I think no one will deny that the availability of such tools has raised the standard of excellence of medical practice and that many of the more advanced measurements are indispensable to diagnosis and control of therapy. To take a case from application of modern physics one may mention electroencephalography in the diagnosis of obscure forms of epilepsy. Here there would be no other way to arrive at a diagnosis; or, in the case of some straightforward but intricate chemistry, no one could possibly manage therapy for electrolyte imbalance safely without elaborate blood chemistry. These are only examples of scores of situations in which specific physical science tools make modern medicine as successful as it is.

A more obvious case of the rise of a whole new field in medicine in the last 50 years is that of roentgenology. The first serious medical use of the x-ray was made by an American, Walter B. Cannon, about 50 years ago. This was one of the first great advances in medicine made in the U.S.A. No one could conceive of practicing medicine today without the x-ray for aid in diagnosis. Furthermore, it should not be supposed that radiology is concerned simply with visualizing existing structures, taking advantage of the differential absorbing power of different body structures for x-rays. Today the radiologist fills and empties various cavities in the body such as the ventricles of the brain, the coronary arteries, or the kidney tubules, with gases or with radio-opaque substances of various kinds. He assays the functional performance of organs by observing how they handle such substances. He must know much about the effects of these substances upon the body and must understand the physiology of the organs in question if he is to interpret his observations.

Another type of application of physics to medicine is the use of measurements of the elastic and viscous properties of the lungs in the evaluation of the possible benefits to be obtained in surgery for certain types of pulmonary disease. Without such information judgments as to the propriety and desirability of surgery are impossible. Likewise in the case of heart surgery, elaborate preoperative diagnostic study of the nature and magnitude of the existing defects is as important as skillful surgery. The physical and chemical equipment needed for such study and the physiological knowledge required for the interpretation of the results of the study are both great. Fifty years of developments in physics and in physiology are behind modern heart surgery.

Late in the 19th century the great German chemist and microbiologist Ehrlich began the search for specific anti-microbial chemicals, which has led to modern chemotherapy. In the 1930's Fleming, the perceptive English bacteriologist, broke the ground for the advances in natural antibiotics with his discovery of penicillin. Following the ground-breaking leads of Ehrlich and Fleming organic chemists and microbiologists have cultivated these fertile fields until today the practice of medicine without chemotherapeutic and antibiotic agents would be utterly unthinkable.

able. To be sure there is much misuse of such agents by some uncritical physicians, who sometimes use them in lieu of serious diagnosis, or even as a placebo, but nevertheless these agents represent real triumphs in the war against disease. It may be noted in passing that their production and sale have become a billion-dollar annual business. Thus, medical advances have had important impacts on modern industrial and economic life.

What have been the consequences of these phenomenal advances in medical science and especially in the applications of physics and chemistry to medicine upon medical education? The first effect has been to compel medical schools to alter their programs of teaching so as to equip the physicians of the future to utilize, better than their predecessors could, the advances which have already been made. The second, less universally recognized necessity for medical schools is to prepare future physicians so that they may be better able to utilize the advances that are still in the future.

Every medical school has to a greater or lesser degree accepted the responsibility for orienting medical students to the already achieved advances in mid-twentieth century medicine. None has fully accepted the challenge to equip its graduates with appropriate basic science background to meet the needs of the future. Many medical schools, and among these Albany is one, have moved in this direction, but as far as I know no medical school has done what it seems to me is necessary to do before we can say we have done the best practically possible job along this line. I have purposefully thrown in the qualification at this point of "practicability" because it is futile to think in any unrealistic terms, as one would if one were to suggest that every physician should be trained like a research scientist. Such an objective would be both impossible to achieve and undesirable, even if it could be done. Rather, I am suggesting that we in medical education have not recognized that the character of biology as a science has changed and that we have not changed our premedical curricular recommendations in line with the realities that exist today.

At this point I wish to digress slightly to say something about the nature of the professional practice of medicine. As a person trained as a physician who has spent his life in a basic medical science I am always afraid that I may over-emphasize the role of science in medicine. Therefore, I wish to make it clear that I believe I do not underestimate the enormous importance of the art of the physician in applying science to the management of the patient. In fact I would insist that to be expert in the science of medicine is never a sufficient qualification for a good physician. It is one necessary qualification but it is not the only one. Therefore, nothing that I shall say about scientific training should be taken to discount the importance of personality characteristics, human sympathy, tact, and as good an understanding of human psychology as is possible to obtain in the present state of our fragmentary knowledge about the higher functions of the brain. With this disclaimer of bias against the recognition of the importance of the art in the profession of the physician I return to my main points.

Medical science is a branch of biological science. Yesterday biology concerned itself mainly with morphology and taxonomy. Modern research biology concerns itself much more with dynamic aspects of the life of individual organisms and populations. Yesterday the tools of the biologist were the collecting net, the animal breeding colony, the dissecting board, the microscope, and the museum.

Today his tools are these plus much of the paraphernalia of physics and chemistry. Yesterday the biologist had to content himself with rather gross observations. Today he is able to spy upon electron shifts and chemical energetics. Yesterday he had relatively little need for a working knowledge of advanced mathematics or physical chemistry or physics or organic chemistry. Today a biologist who wants to understand what is known about genetics, about metabolism, about locomotion, about nervous action, about endocrinology, about circulation, about respiration, about material transport or about any one of a score of other biological phenomena must have more background in mathematics than a superficial introduction to the calculus and must know more about organic chemistry than the names and structural formulae of a number of biologically occurring substances.

A biologist cannot begin to think about process in living systems without better background training than the average medical student today has had. Medicine deals with process in human disease. A physician must therefore be able to think about process if he is to be able to meet the needs of medicine in 1960, but even more so to meet the challenge of the future.

What, specifically, would I recommend? First I would urge that we as medical educators stop our long-standing practice of encouraging premedical students to take diluted, watered-down courses in mathematics, physics, and chemistry. We have no one but ourselves to blame for the fact that most colleges and universities offer beginning courses with a higher standard of performance in those subjects for prospective engineers and a lower set of standards for premedical students. In many instances we do not even have the excuse that the time required would be appreciably greater.

I want to raise one very simple question at this point. Is it more important to our society in America to have scientifically well-grounded chemical engineers, civil engineers, electrical and mechanical and architectural and aeronautical engineers than to have scientifically well-grounded physicians? All of these are practicing professions. They are not research scientists. If anyone's answer to this question is that excellent scientific training for physicians is not at least as important to society, the rest of my argument is pointless. But if your answer is, like mine, that since human lives are at stake every hour of the day of a physician's professional life, just as human lives are at stake when an engineer designs a bridge or an airplane, physicians should be as completely educated as they can be in every fundamental science important to their profession. I see no reason why an engineer should have the advantage of a working knowledge of mathematics, and a physician should have such knowledge discouraged. I see no reason why a chemical engineer should have the benefit of mathematics and an understanding of the physical chemistry of processes with which he works, and a prospective physician be discouraged, or perhaps, better said, not be encouraged, to obtain an understanding of the physical chemistry of processes going on in the human body.

As of today there is only one medical school in the United States that requires a course in physical chemistry as a requisite for admission. Even in that school great pressures have been exerted to have the requirement dropped. I speak here with intimate knowledge, because it is my own school. What are the reasons given by those who would abandon this requirement? There are two. One, and the major one, is that since that school is unique in this requirement many otherwise highly qualified students do not apply for admission. The second, with which I sympathize

in part, is that one should not impose excessively rigid entrance requirements upon any exceptionally competent scholar wishing to begin medical studies. However, my solution of such problems would be to admit genuine geniuses without reference to any specific requirements. Geniuses come along sufficiently rarely so that they do not constitute a very common problem.

My plea is that medical educators pay the attention that it deserves to the advancing nature of the science of medicine. This cannot be done without altering our outlook both upon premedical education and medical school studies themselves. I am totally unimpressed by the arguments I have heard made that one can easily put a good scientific foundation under a medical education after it has been completed if a medical graduate finds that he needs it. When one is building a house he does not dig the foundation after the house is built—at least not if he wants to do it efficiently. If only the rare physician needed a scientific foundation one might put up with such inefficiency. However, as I have tried to point out, every physician needs to understand the mechanisms of processes going on in his patients' bodies if he is to use the fruits of advances in physics and chemistry as applied to medical science effectively and safely. Society has such a great stake in the best practicable training of its medical profession that it should insist that the basic mathematics, physics, and chemistry education of its physicians should be strengthened promptly. Better premedical education in those areas of knowledge is more critical than is any major change in medical science education proper. At least in the medical schools about which I have intimate information, the greatest limitation in presenting the functional biology underlying medical science is the premedical preparation of the students. There are some other defects in our medical education program. Biochemistry and physiology will require a larger fraction of the time devoted to the medical curriculum than is now the case, if a student is to be able to obtain a working grasp of those subjects. However, many of the applications of those sciences can as well be presented in the clinical years as in the basic courses, and are in fact being so presented in many institutions.

Up to this point I have dealt with education for the professional physician. There is a related problem, namely, that of education for teachers and investigators in medical fields. Everything that has been said about the necessity of better fundamental science and mathematics background for the practicing physician applies with even more force to the problem of the nurture of investigators and teachers of medicine for the future. The competent basic medical scientist of the future will of necessity have to be more deeply grounded in the physical sciences than the practicing physician. The competent clinical investigator and teacher will obviously need more knowledge of some one or several basic medical sciences than will the practitioner. These are not new ideas. For many years academic clinicians were ordinarily expert in morphologic pathology. Recently many clinicians in academic positions have been expert in some branches of chemistry, microbiology, physiology, or pharmacology. This trend reflects the enlarging importance to practical medicine of those more functional or dynamic sciences.

One important reason for improving the standards of mathematics and physical science education for premedical students is to enlarge the man-power pool from which academic medicine can draw in the future. A significant fraction of medical school graduates, varying from school to school but reaching 5 per cent in some, will devote themselves exclusively to teaching and research. An even larger frac-

tion will do part-time work of an academic character. It seems obvious that the decision as to whether to do full-time practice or to do part- or full-time research and teaching cannot be arrived at by young people in high school or college. To make a later decision possible the road in either direction must be kept open as long as possible. In other words a medical school graduate should have as few impediments as possible to equal choices between various career opportunities. To have such real freedom of choice he should not have to dig a whole new foundation to go into an academic or research career.

Adequate education today for the medicine of tomorrow offers a challenge not only to medical educators but to society. Many medical schools, including my own, accept students after 3 years in college. I doubt that my suggested requirements for premedical preparation could be met in less than 4 years without sacrificing some humanistic studies. This I would not recommend.

More scholarship help perhaps will be necessary to maintain an adequate number of qualified applicants to medical schools if premedical training is to be extended.

We are by no means exploiting the full man-power pool today. According to studies by the Association of American Medical Colleges 81 per cent of present-day medical students obtain significant parental financial help, as opposed to only 22 per cent of all other graduate students who do so. Fifty-four per cent of medical students receive more than \$900 per year from their parents.

By coincidence, 54 per cent of all other graduate students receive that sum from scholarship aid, while only 8 per cent of medical students receive that much from scholarship aid. Thus, we are limiting our medical man-power on economic grounds to a very large degree. There is little room for reasonable doubt that if financial barriers were removed or even lowered there would be more students of high ability going into medicine. More scholarship aid for premedical and medical students is going to be needed to increase our medical man-power output.

The leaders in American society will not knowingly tolerate the production of poorly trained physicians. Our society is affluent enough to be able to afford the best type of education for its doctors. One of our responsibilities as educators is to point out what things must be done to produce a high-quality product in our medical graduates.

The American people undoubtedly want to have access to medical care provided by physicians practicing their art on the basis of a scientific background at least as good—relative to the needs of the field—as that of the engineers practicing their arts.

The fact that the practice of any profession involves the skills of the artisan does not alter the equal fact that in the scientific professions the art becomes no more than a confidence game if the science is not there. For the future, since medical science is progressing, society needs better scientific preparation for its physicians. It needs to have this made possible without subtracting from the humanistic qualifications of the good doctor.

THE THREE FACES OF MEDICINE

EDWARD A. GALL, M.D.†

Many are familiar with the ugly, red, brick facade of the Smithsonian Institute in Washington, but few have paid much attention to the now partially abandoned neighboring structure which once housed the Armed Forces Institute of Pathology. A short distance from the rear of this edifice, gazing off into the Mall, is a full-length statue of a man clad in mid 19th-century garb. It is a rare passer-by who pauses to read the inscription on the stone pedestal, so that this memorial to Samuel D. Gross receives little attention. A founder of the Jefferson Medical School, its long-time Professor of Surgery, and a man whose voice once rang with the authority of medical leadership, Gross in his younger days was a practitioner in Cincinnati and the first Professor of Pathologic Anatomy at the Cincinnati Medical College, a precursor of our own school. Indeed, this latter appointment was the first instance that any individual held such a chair in the United States. How Samuel Gross bears upon the tale today will become evident presently.

You may recall that from time to time I serve as visiting consultant to the Armed Forces Institute. On such a tour a short while back I found myself involved in weighty matters with a group of resident colleagues. For some reason we were concerned with the state and future of modern medicine, and our amiable discussions carried us into a long spring night. As sustenance there may have been some poorly labeled liquids from a conveniently located reagent shelf. This is unclear to me at the moment. However, our exchange attained such intensity that it was well on toward midnight before we realized—they, that they had homes—I, that there were manuscripts to be read in my hotel room. Thus, we parted, pledging unwavering friendship, and with studied gait I moved out onto the moonlit Mall. Pausing beside the figure of Dr. Gross, on impulse I sat upon a nearby bench for a quiet review of the evening's considerations. It occurred to me as my eye passed aimlessly over the statue that Medicine must have been comparatively simple in the mid 1800's. Gross had been involved in most of its scientific and its nontechnical professional activities. I wondered how he would have reacted to modern complexities. Perhaps unconsciously I spoke my thoughts aloud for a quiet voice above me said "After all, complexities are entirely relative. They depend a good deal upon where you sit at a given moment. Don't you think so?"

I looked about bewildered and could see no one—only the statue—but the semblance of a smile on its metallic face indicated that this was the source of the voice.

"Don't be startled," he went on, "I don't ordinarily address strangers, but you have a familiar look, and you spoke of things that have long held my interest. Would you mind saying who you are?"

* Address given at the 142nd Convocation, College of Medicine, University of Cincinnati, Sept. 26, 1960.

† Department of Pathology, College of Medicine, University of Cincinnati and the Cincinnati General Hospital.

Recovering from my confusion I introduced myself and told whence I had come. There was an expression of pleasure at the parallel nature of our interests and activities, and soon we were talking in warm and friendly manner. He seemed greatly interested in the present condition of his old school, and it was gratifying to note how impressed he was as I told him of its growth and renown, of the distinction of its faculty, and of the high caliber of its students and graduates. He sighed as he spoke of the difficulties which had attended his own stay in Cincinnati and how he had travelled widely in a vain effort to find an appreciation for his talents. As our conversation waxed, I recounted the matters that had constituted the theme of the discourse earlier that night. He seemed impressed as I told him how far Medicine's horizons had spread and how dedicated and effective were her sons. How proud he was to have been one of the sowers of the seed which had borne such glorious fruit. He was delighted as I told him of the great esteem held for the profession, the eagerness with which young men vied to enter its domain, and the high ideals which motivated its devotees.

"In our day," he said a little sadly, "we were quite uncertain about the future. We suffered grievously from an inordinate number of internal difficulties and were so often at odds with each other. You are very fortunate to have resolved these problems. Today, Medicine obviously has a solid front and its face must beam beneficently on all. Our students were eager to get on to a means of livelihood that they were impatient with our caution and were prone to rebel against us. The teachers themselves were annoyed at the futility of satisfying the demands of their students and were appalled at their impatience and lack of filial respect. Outside the academic pale, graduate physicians took pains to assert their independence of those who had taught them and even sought to compete with them by the willy-nilly organization of new schools. It was as though there was not one face of Medicine but three, and each seemed inconsistent with the others."

"But Dr. Gross," I said, "that's exactly what I had in mind before, when I referred to the complexities of *modern* Medicine. Obviously, you had many of the same problems in your day; but as I listen, I am inclined to agree with your initial remark that it really depends upon where one sits and when. Our error is in the assumption that so large a profession could possibly agree upon a single means toward a common end. There *is* no one face, *no* one tongue, *no* one mind! But as sharply as we appear to differ, the goals we seek are nonetheless identical. Unfortunately, each of us finds himself in a state of flux, and the problems of a given moment naturally color his views. The student, a mere academic babe, would necessarily center his attention upon the need for survival in the pedagogic arena. He has had a difficult enough time getting into it, and his main desire is to get out of it with a whole skin—and as quickly as possible. The teacher, on the other hand, sets himself up as a combination watch dog and custodian, jealously guarding entry into the shrine, trying to insure that only the worthy pass its portals; and at the same time striving assiduously to keep the temple scientifically holy. The practitioner, well—there's something of the teacher in him, too, in spite of himself—but he's been in and out of the mill and, for the most part, now wants only to be permitted to keep his own counsel without undue interference."

"I suppose," he mused, "if each would listen and consider the peculiar problems of the others there would be a good deal more harmony. But I wouldn't dare speak for all sides—would you?"

"Speak for them? No, of course not," I replied, "but I've listened to them and I think I could record their views."

"That would be quite a challenge," he said, "I'd be curious to hear how impartial and dispassionate a reporter you'd be. As a matter of interest, what of the first face—that of the students; what would you say were his concerns?"

"His situation is a little difficult to handle," I confessed, "his views are so precipitous and changeable. He begins his career with uncertainty as he is transformed abruptly from the lordly status of the college senior to the lowly one of the freshman 'medic.' He honestly believes that he asks only the opportunity to attain that which he has sought most of his adult years—a broad medical education. On the other hand, he firmly resists theoretical considerations, insisting that this is a workaday world and that vaguely worded principles have no place in its scheme. 'This,' he says, 'is the era of the "clear head" not the "egg head." Convinced that facts must prevail he is confused by texts and lecturers that offer conflicting opinions. The proper bedside manner and procedural details are of vital importance to him but, instead, he is beset with anatomic relationships, structural formulae, and the circuitous perambulations of inconsequential metabolic by-products. 'Moreover,' he wails, 'none seems interested in correlating these exotic details with the simple mannerisms of disease states. It is a frustrating waste of energy to be compelled to probe meticulously into fine distinctions among microbial forms and histologic structures when a single drug will control the inroads of dozens of disorders.'

"His sense of propriety is offended by the monotony of repetition and the seemingly thoughtless and unplanned overlapping of course content. Straining for an early approach to, and responsibility for, the patient, he is tied down to the microscope and the kymograph, muttering the while that his future will be spent in a sickroom not in a laboratory. Textbooks, illy conceived, fail to indicate that which is essential and that which is not. Nomenclature attains an enormity beyond the capacity of mere man. This, of course, does not deter *him* from coining new phrases.

"Brainwashing is in constant practice in the form of endless lectures. This is an obsolete pedagogic method at best, and obviously is utilized out of deference to the older members of Faculty. To be useful at all, lectures must be orderly, clearly spoken, and enlivened by pithy anecdote. Preferably they should be mimeographed, pre-distributed, and with underlining of those matters which are universally acceptable and constitute minimum requirements for graduation.

"It seems deplorable that faculty pre-occupation with other than student affairs precludes the personal attention necessary for accurate evaluation. Hence, the need exists for examinations. These would, however, be more effective were they scheduled at convenient times, couched in simple terms, and answerable by free association rather than analytic cerebration. The current fondness for multiple choice and related questions forms seems designed to traumatize the examinee, drain his emotions, and eliminate the outpourings possible with conventional essay type examinations which might conceivably contain detectably proper responses. If proctoring examinations are essential it should not be delegated to secretaries or clerks who do not have sufficient knowledge to divulge correct answers inadvertently under skillful cross-examination.

"A teacher is paid to teach, not to sacrifice rats and hamsters. Perhaps if the faculty spent less time in research a happier, healthier student state would prevail. Motivation is too delicate and necessary a thing to be jeopardized by impersonality. It is demeaning not to be known by name; to be required to wear name tags is an outrageous example of regimentation. 'If Dr. What's-His-Name; you know, the one with the brown hair and horn rim glasses; cannot learn who we are by conventional means—he must be suffering from some form of latent hostility.'"

"The curriculum requires renovation. This is widely recognized. More free time for daylight contemplation and less intrusion by study assignments upon evening employment are primary considerations. It should not be made to appear that gainful occupation in extramural time is sinful. This may possibly be a deliberate attempt to starve the student into submission (and his wife and children as well). If such extracurricular employment is to be decried, then some sources of subsidy should be provided. Loans, however, are undesirable. They simply carry the burden of debt into a precarious future.

"Efforts to mold the student into the image of the teacher are unfortunate and arouse resentment—horizons should be broad and not restricted by the tunnel-vision of the specialist. The whole man is the physician's mission, not his gall bladder or his colon. His psyche certainly deserves more careful consideration but, so, for that matter, does the student's. It is discouraging for the thoughtful student to point out errors of pedagogic omission or commission and not observe immediate corrective action. Ample guidance is certainly provided for faculty improvement. There are well chosen student deputations, skillfully worded class questionnaires and constructively critical senior class plays but, alas the monolithic fixity of faculty remains unmoved."

"Curious," remarked Dr. Gross, "there's a remarkable resemblance between the modern student and his forebear. But I'm not altogether certain you were unbiased in your recital—I sensed a note of exasperation."

"Oh, no," I protested, "I'm a trained observer and I listen very carefully to my students. I wish the reverse were true."

He chuckled and said, "I won't labor that point. However, what have you to report for the second face, the tenure-hedged faculty paragon. Is he the chill, bloodless escapist he's been painted?"

"To the contrary," I protested, "he's also confused. Each year his students become progressively more youthful in appearance and manner. He squirms at their unfamiliarity with vocabulary and the simple tenets of grammatical form. Outraged at the inconsistency of their alleged high aspirations and their pedestrian efforts, he clings despairingly to his fading dreams. He is repeatedly accused of apportioning undue weight to numerical (or other) grading systems but is nevertheless being constantly maneuvered into corners by pale-faced wraiths worriedly querying 'How am I doing?' Efforts to raise academic standards bring howls of protest; to lower them brings murmurs of contempt."

"Having attained his 'exalted' status by diligent application, untold sacrifice, and creative forays—and maintained it in an intensely competitive field by unceasing, sweaty effort, he is blithely informed that he has selected his way of life because he seeks to avoid embroilment in the affairs of men and fears the contamination of association with patients. Any attempt to emerge from his 'full time' financial sinecure as a clinical consultant is greeted with the challenge

that he is unfairly misusing the prestige of his position. Genteel shabbiness for himself and family and restricted educational horizons for his children are to be proudly accepted as badges of community distinction."

"Having become experienced in surviving on a limited household budget it naturally follows that he would react with revulsion to any allocation of institutional funds in excess of a bare minimum. It is invariably conceded that great contributions are best made under adversity; thus, 'heigh-ho, and off to soldering leaky trays, taping cracked pipettes and clearing littered cages!' After all, satisfaction with one's lot leads to smugness and, in turn, to lethargy. Besides, a little enterprise would bring the supplement of a Federal grant, although taxes are inordinately high and one must have in mind that the hand controlling the issuance of coin may well, in time, control those who spend it."

"The curriculum is outdated and unbearably overcrowded. Newly paved avenues deserve exploration. Time-tired principles require retention. Non-essential or fallacious, but conventionally taught material, must be dislodged. But, how, and by whom? Each member of faculty freely recommends suitable revisions for all others but haughtily resists interference with his own determinations. A simple solution, of course, would be an increase in curricular hours by the extension of the school year. Thus, for the nonce, everything could be retained unchanged and new facets added to boot. It is an annual foolishness to set aside 3 months for student summer relaxation or the procurement of needed funds. Medicine is, after all, no soft-handed mistress. Of course, reduction of the summer interlude affects the faculty as well, but as indirect benefits there would be lessened exposure to the hazards of outdoor camping, an opportunity for uninterrupted maintenance of the spirit of dedication, and the emergence of fewer inconsequential publications."

"All seek instruction via patient contact as early in the curriculum as possible. 'Any intrusion upon the teaching of so-called fundamentals,' it is said, 'may be rectified by placing this in the later clinical years, after familiarity with the patient has been attained.' Of course, in the event there is no time in these latter years there is always room for compromise. It is not said by whom. There is said to be need for greater emphasis on the humor, less on the cell; more on the psyche, less on the organ; more on economics, less on tradition; more on people, less on words. The ivory tower, this!

"The faculty is firmly advised that its primary mission is the instruction of the student. Research should be an incidental avocation. The newly appointed professor? Has he attained this distinction with a non-existent list of publications? The promotion to associate professor? Has this been awarded for teaching talent alone? Devotion to undergraduate tutelage is all very fine but in university circles the all-encompassing dictum is 'Publish or wither on the vine.' Is it gross selfishness which causes some to ascribe to the former in preference to the latter?

"While the future is in mind, whence the supply of teachers? The gaps in the lower ranks of faculty rosters cry even to the unwary that the production line of Medicine may well grind to a standstill. A purposeful recruitment campaign is assuredly in order. How shall this be implemented? It is a very special breed that would grasp the opportunities for mediocrity of quarters and equipment, limited budget and salary, expanded curriculum and reduced leisure, disparage-

ment of investigation, all wrapped up in praise for the product and damnation for its creator."

"I detect quite an undercurrent of protest in what you say," remarked my listener. "You've certainly covered a wide range of institutional problems. Some of them are quite familiar to me—but you've got some new ones I never encountered in my time." There was a muffled sound of a yawn as he went on, "It's getting a little late—or rather early, and I fear I shall have to get back to limbo. Do you suppose you could describe the face of the third group in résumé?"

"I'll try," I said, "although they've also got quite a bit to say. After all, practitioners are about 6 times more numerous than the other two groups. But I'll hold myself to the high spots if you'll bear with me."

"The practitioner constitutes the truly familiar face of Medicine. He is the purveyor of its art and science. He has overcome, and may even, indeed, have forgotten, the hurdles and restraints of his formative years. He has survived the sobering experiences of undergraduate life and of intern and resident years. In his past are the voluminous paper work in hospital charts, the scurrying about to meet the whims of visiting staffs and even the stately crawl of military service. Many have braved the specialty boards; some of these have come to view their certificates as guarantees of privilege and not indications of accomplishment."

"Now clear of the watchful eye of Big Brother, come the long awaited moments for free enterprise and rugged individualism. Each now is his own master and may await the slow enlargement of his clientele and watch with eagle eye the availability of hospital beds. Now there is ample opportunity for the judicious repayment of personal debts and the logistical planning for daily consultation with insurance agents and pharmaceutical detail men. The most choice of all men's relationships, that of doctor and patient, moves into center stage and with it the danger of accepting the emotion-tempered judgment of the patient as a measure of professional attainment. There are journals to read, meetings to be attended, clinic and house staff instruction to be given, new drugs to be tested and night calls in increasing frequency (and not necessarily on alternate nights).

"Hospital costs spiral to the point of toppling the entire edifice of medical practice. One could easily find luxurious accommodations at a leading hotel and sumptuous meals, as well, for the daily outlay on a semi-private hospital bed. The ancillary demands of medications, laboratory fees, special care and other intramural conveniences all contribute to medical indigence. Nurses are too few and, in the main, have assumed executive status. Other attendants not instructed in the significance of professional dignity intrude their distracting activities on patient and physician alike.

"Those few interns who escape the ill begotten tentacles of university hospitals are miserably short supply. Efforts to instruct them, those who do filter into private hospitals, are met by elusive dodging and yet they loudly demand instructional programs. Poised for flight, they barely hearken to the words of medical wisdom proffered to them. The foreign graduate often fails to understand what is said to him at all, and his record-keeping requires the attention of a skilled and saintly editor. One can never be certain that one's instructions are understood or even carried out; and yet even these aids are to be taken from us by the evil machinations of the E.C.F.M.G. As though there was not a sufficient

burden there are the time-consuming requirements of national commissions and boards with the need for progress, operative, and discharge notes, deadlines for signatures, tissue audit committees, interdiction of telephone narcotic orders, roll call at staff meetings, and other gloomy indications of impending regimentation.

"It is left for the physician to flee to the quiet of his office avoiding curbstone consultations *en route*. With telephone muffled he may ponder leisurely upon the joys of medical practice. From the journals and assorted papers massed on his desk he reads of the voice of the 'grass roots' bewailing the intrusion of 'socialization,' 'insurance forms,' and 'paramedical cultists.' He learns that the specialist is uncooperative and knows more and more about less and less. The solo practitioner envies, he is told, the conveniences of group practice, while the adherents to the latter urge exquisite caution in the reading of contractual fine print. The town stalwarts worry their gown colleagues; the veteran, the non-veteran; the native, the foreign graduate; the outsider, the closed staff—and *vice versa*.

"And in the background a muted chorus chants: USPH, V.A.—LMD, AMA—UMW—G.P.—!"

"Something wrong with you, Mister?" said an unfamiliar voice. I started upright—bewildered. It is broad daylight on the Washington Mall. A sight-seeing bus is parked at the curb, and its passengers are clustered about me. A quick glance at Dr. Gross's statue reveals its bronze facial contours set and its empty eye disinterested. There is, however, the barest vestige of a fading smile.

"You seemed to be napping," said one of the nice ladies in the tourist group, "but you were mumbling to yourself. We couldn't help but listen. It seemed very interesting, although I, for one, am not sure what you had in mind."

I rose stiffly from the bench, nodded embarrassedly, and as I strolled off in the warm morning sunlight murmured, "I'm not at all certain I know what it means either. But then—who does?"

ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

ANGELA SANCHEZ-BARBUDO, PH.D.

Abstract Editor

The Evolution of Modern Obstetrics.

SIR DUGALD BAIRD, M.D., *The Lancet*, Vol. II, No. 7150, pp. 557-564 (Sept. 10), 1960.

Forty years ago, the author recalls, when he was a medical student in Glasgow, childbirth was a dangerous and wasteful process. Out of 19,000 women admitted between 1925 and 1929 to the Glasgow Maternity Hospital, 542 died. At that time, clinical obstetrics for students consisted of (a) sitting in a large amphitheater and watching their teachers perform cesareans and various types of vaginal operations and (b) conducting domiciliary deliveries with a fellow student, unsupervised and without having received previously any practical instruction. Medical staff and students were so occupied with the problem of keeping the mother alive (in the 1920's in the Glasgow Royal Maternity Hospital, an average of two maternal deaths occurred every week), that the very high fetal mortality was seldom discussed. The two main causes for the excessive maternal mortality: (a) ignorance of the causes of many serious complications of pregnancy and labor and the inadequacy of therapeutic methods available; (b) the lack of a well organized maternity service staffed by well trained doctors and midwives (to the great incompetence of midwifery throughout the country in the 1920's many deaths must be attributed, as national inquiries have shown). Since

then, great progress has been made, especially from 1935 on, when it became possible to take effective measures against *puerperal sepsis*, by far the greatest cause of maternal deaths in the past. The sulfonamides, very effective against *Streptococcus*, were introduced in Britain soon afterward, being now replaced by penicillin. It is pointed out, however, that, while the rise in the incidence of drug-resistant organisms in most maternity hospitals in recent years has not so far increased the maternal death-rate from sepsis, it has emphasized the need to practice the principles of isolation and barrier nursing if maternity hospitals are to be kept safe for mother and child. The advances in abolishing other causes of maternal death in the past, such as hemorrhage and toxemia are also examined in this paper, as well as the progress made in avoiding maternal deaths due to general conditions complicating pregnancy (a striking feature of those days was the large number of fatal cases associated with excessive childbearing). The Wrigley Report (1957), based on a confidential inquiry on 1094 maternal deaths which occurred in England and Wales between 1925 and 1954, showed that the over-all maternal mortality had fallen to about one-sixth of that in 1932, toxemia having become the most important single cause of death; a primary avoidable factor was present in 43 per cent of cases (most frequently the patient's failure to con-

sult a doctor); 14 per cent of the deaths followed abortion (mostly procured by the mother herself because of poverty). Since the Wrigley Report, maternal mortality has still gone down and should continue to fall in view of the high standard of obstetric care and conscientious, cooperative patients. As to fetal or *perinatal*, mortality (defined as the number of stillbirths and deaths in the first week after birth, per 1,000), variations in the still-birth rate in England and Wales over the last 30 years are studied in detail. Although the lack of improvement in this area since 1948 is a disappointing fact, the importance of the standard of living in this connection is adduced by comparing trends in regions where socio-economic characteristics differ sharply. The regional differences seem to play a very similar role in the question of *infant* mortality from diseases like T.B., associated with malnutrition and poor living conditions. Since the variations in health and nutrition existing in Britain today are difficult to define and diagnose clinically, the author uses in his study indirect indices such as social class and physical height. The variation in reproductive efficiency resulting from variations in maternal physique and health helps to explain some of the epidemiological facts.

The Willing of Human Bodies for the Promotion of Anatomic Science—*Res Ipsa Loquitur*. BENJAMIN SPECTOR, M.D., *The New England Journal of Medicine*, Vol. 263, No. 14, pp. 695-696 (Oct. 6), 1960.

The willing of bodies for the promotion of science is becoming an increasingly important source of material for anatomic investigation. However, most prospective donors and many physicians are ill acquainted with the legal aspects of this matter some of which are discussed in this paper. Dr. Spector (a

Professor of Bioanatomy at Tufts University School of Medicine, and coordinator of anatomic material for his school as well as for Harvard and Boston University) points out that, since the time of Lord Coke, the eminent English lawyer and jurist (1552-1634), Anglo-Saxon Law has always supported the idea that there is no right of ownership of the dead body in a commercial sense. Since "there can be no property in the dead body," it is impossible that "by will or any other instrument . . . the body can be disposed of." However, at present, most courts, influenced by a change in public opinion, are tempering this basic principle to the extent that a testator may, by will, give effective directions for the anatomic examination of his body after death, subject to a right of objection by the surviving spouse or next of kin. According to a report of the National Conference on the Legal Environment of Medical Science (held in 1959), over half of the states of the U.S.A. have some sort of legislation on body bequest, and in the last 5 years, sixteen new laws have been adopted in this matter, all indicating a recognition of the fact that direct personal knowledge of the structure of the human body by dissection is a basic requirement for sound medical education and that the lack of testamentary disposition is a barrier to medical advance. Opposition to body bequest on religious grounds, which in the past has been very strong, is also lessening considerably, especially among Catholics, since 1956, when the Pope pronounced himself on this matter stating that "a person may will to dispose of his body and to destine it to ends that are useful, morally irreproachable and even noble . . ." and recognizing that the furthering of anatomic science constitutes such an end (cf. *The Pope Speaks*, pp. 198-206, 1956).

NEW BOOKS

KENNETH E. PENROD

Book Review Editor

Abstracts

Infectious Diseases of Children. By SAUL KRUGMAN and ROBERT WARD. 2d ed. St. Louis: The C. V. Mosby Co., 1960. 381 pp. \$13.00.

The stated purpose of this book is to provide a concise and handy description of certain common infectious diseases in children. It is written primarily for pediatricians, general practitioners, and medical students who deal with children. The publication of the second edition of this work was largely dictated by the explosive new knowledge concerning the viruses. A new chapter entitled "Acute Respiratory Infections" represents an attempt to bring some degree of order to an area of etiologic chaos. In the chapter entitled "Enteroviral Infections," poliomyelitis and Coxsackie virus infections have been grouped together, with a new discussion on E.C.H.O. viruses and the clinical syndromes caused by them. A fresh appraisal of live polio virus oral vaccines has been included. Rabies is the subject of a new chapter, largely because of its knotty problems of prevention. New information concerning adenoviruses, chicken pox, pneumonia, infectious hepatitis, *Herpesvirus hominis* and *Herpesvirus simiae*, measles virus and rubella during pregnancy has been included in this edition. Diphtheria immunization of adolescents and adults has been discussed in more detail. The management of acute bacterial meningitis and of staphylococcal infections has been reworked to conform with recent experience. Attention has been called to the highly fatal "gray baby" syndrome, the result of overdosing the premature and new born infant with chloramphenicol. This text does not include chapters on tuberculosis, syphilis, the leptospiroses, yellow fever, malaria, and various diseases caused by fungi.

Blood Diseases of Infancy and Childhood. By CARL H. SMITH. St. Louis: The C. V. Mosby Co., 1960. 535 pp. \$17.00.

The purpose of this book is to present the essentials of pediatric hematology in concise form for the medical student and practitioner. The salient features of blood dyscrasias are presented against the background of normal development of infancy and childhood. The rapid development of pediatric hematology can be strikingly illustrated by recalling the fate of von Jaksch's anemia. This syndrome which dominated the discussions of anemia in pediatric textbooks 30 years ago receives scant mention or is entirely omitted from present-day publications. The dismemberment of this heterogeneous group of blood disorders replaced by more soundly based conditions reflects the evolution of new concepts in a rapidly expanding field of medicine. The discovery that drug sensitivity and favism are based on a genetically transmitted enzyme deficiency suggests that other unexplained hematologic entities may also eventually be included in the growing list of inborn errors of metabolism. This book is not intended to supplant larger works on hematology; rather, it is designed to serve as a companion volume, since few diseases in this or other specialties can be arbitrarily restricted to a specific age period. It is planned throughout to emphasize the pathogenesis of hematologic disorders of the pediatric age group in the light of established concepts as a basis for rational treatment. Only that segment of hematologic and pediatric knowledge which bears pertinently on the interpretation, diagnosis, and management of the blood diseases encountered in pediatric practice is contained in this work.

Handbook of Physiology. Section 1: Neurophysiology III. Editor-in-Chief: JOHN FIELD. Section Editor: H. W. MAGOUN. Executive Editor: VICTOR E. HALL. Washington, D. C.: American Physiological Society, 1960. 1441-1965 pp. \$20.00. (Distributed for the American Physiological Society by The Williams and Wilkins Co., Baltimore 2, Maryland.)

The first three volumes of this handbook constitute the "Section in Neurophysiology." The first volume of this section was acknowledged in *The Journal of Medical Education*, December, 1959; the second in May, 1960. The entire series is addressed to students, young and old, with considerable background in physiology, who need to raise their level of understanding and sophistication to that adequate for predoctoral study, for teaching and for preliminary orientation in preparation for research. The first three volumes of the handbook are devoted to neurophysiology, since this field has been so transformed by the developments of the past 25 years as to make it the obvious choice for the first treatment.

Clinical Applications of Cardiopulmonary Physiology. By M. HENRY WILLIAMS, JR. New York: Paul B. Hoeber, Inc., 1960. 225 pp. \$7.50.

It is the intent of this book to outline normal cardiopulmonary physiology, to point out the areas that may be assessed by physiological techniques, and to indicate the bearing that such studies have on the diagnosis, evaluation, and treatment of patients with cardiopulmonary disease. Disease of the heart and lungs has been considered as a unit for many reasons. The information presented in this book will be of value to the physician in helping him select the studies indicated for the proper evaluation of his patients. In addition, an understanding of normal and abnormal cardiopulmonary physiology will provide both the student and practitioner with a basis for the evaluation of clinical signs and symptoms which may occasionally serve as a substitute for more precise measurements of disturbed function. This is not a detailed textbook of techniques, of cardio-

pulmonary disease, or a review of the literature. Rather, it is a distillation of personal experience and is designed to present an approach to clinical cardiopulmonary physiology which is comprehensible and of practical value. The material is given as briefly and clearly as possible, without a wealth of documentation or of historical background. The bibliographies that appear at the end of each chapter have been restricted to key articles and books which substantiate and amplify specific points in the text.

The Electrical Activity of the Nervous System. A Textbook for Students. By MARY A. B. BRAZIER. 2d ed. New York: The Macmillan Company, 1960. 262 pp. \$8.50.

This book is written for students with the purpose of bringing together under one cover a survey of the electrical activity of the nervous system. It is not intended to be a technical manual. In the 9 years since the first edition of this book many changes have taken place in fundamental knowledge of the nervous system. One of the most basic bits of newer knowledge is that the component parts of the individual neurone have different properties. The rate of discharge, the threshold for discharge, and the rate of repolarization varying from one part of the membrane to another in the same neurone, provide mutually interacting variables, even at the unitary level. The formerly accepted dichotomy between sensory and motor systems is no longer so valid, and a further degree of sophistication is called for in the stimulus-response concepts that have ruled for so long. This book is intended for physiology and medical students, but it is also indispensable to neurophysiologists and research workers in electrophysiology as well as teachers of these subjects.

Chemobiodynamics and Drug Design. By F. W. SCHUELER. New York: McGraw-Hill Book Co., Inc., 1960. 625 pp. \$19.50.

This book is written for pharmaceutical chemists, pharmacologists, pharmacists, and physicians, whose daily life tasks bear upon the design, formulation, or use of

drugs. In addition it is for others who have contributed to the foundation knowledge of the nature of life's most intimate processes in the sciences of biochemistry, physiology, experimental pathology, psychobiology, psychology, and biophysics. The emphasis in Part I, *Chemobiodynamics*, is upon the structural and functional relationship of chemistry and biology and its antecedents. Part II, entitled "Drug Design," represents the practical and creative open road that is a corollary of the idealistic and heuristic alter face of chemobiodynamics. In this part, the objective is not so much passive learning and appreciation but rather active positive thought and things to be done. In a practical sense it has been the objective of the author to provide a volume which may serve as a textbook for students interested in the relationship between chemical constitution and pharmacologic activity. Further, this book may serve as a supplement for teachers in courses on medical, dental or veterinary pharmacology who for particular students desire a reference or textbook concerning the fundamental nature of drug action not dealt with in conventional books oriented primarily toward therapeutics.

Introduction to Medical Physics. By J. TRYGVE JENSEN. Philadelphia: J. B. Lippincott Co., 1960. 234 pp. \$2.90.

This paper-bound volume is written primarily to be useful in hospital and collegiate schools of nursing, not only as a text where a physics course is offered, but also as a resource book in other nursing courses where physical principles are involved. Students in related medical fields such as optometry, physical therapy, and x-ray, as well as the biological sciences, may also find it useful. The material was selected as a result of 7 years' experience with registered nurses who were completing the work for the Bachelor's degree at Teachers' College, Columbia University, and it has evolved out of the needs of these students.

Aids to Histology. By GOEFFREY H. BOURNE. 7th ed. Baltimore: The Williams and Wilkins Co., 1960. 161 pp. 3.00.

In a rapidly developing field like histology a detailed textbook sometimes provides too much material for a student to digest when he is new to the subject, and a short up-to-date text such as is represented by this small pocket edition which represents the classic information about, and the more recent developments in, the subject of histology may prove helpful. With its aid the student can make a quick survey of a subject before proceeding to a detailed study with the aid of a much larger textbook. Conversely, when summary of the salient facts is required immediately prior to examinations it is the hope of the author that the student will find them in these pages.

Medicine as an Art and a Science. By A. E. CLARK-KENNEDY and C. W. BARTLEY. Philadelphia: J. B. Lippincott Co., 1960. 408 pp. \$6.25.

This volume attempts to explain, rather than catalog, human diseases. It is expressly designed to serve as a guide and companion to the textbooks of an encyclopedic nature. The authors provide a framework of basic knowledge on which by thinking, and continuing to think, about the cases he sees, and by using textbooks for reference, the physician can build up actively that background of wisdom in his mind which will enable him to practice medicine safely. It is divided into five parts entitled, respectively: "The Patient and His Disease," "Primary Functional Disorders," "Organic Disease," "Clinical Diagnosis," and "Principles of Prevention and Treatment."

The First Five Minutes. A Sample of Microscopic Interview Analysis. By ROBERT E. PITTINGER, CHARLES F. HOCKETT, and JOHN J. DANEHY. Ithaca, New York: Paul Martineau, Publisher, 1960. 259 pp. \$6.50.

This study draws upon the techniques of two disciplines: psychiatry and anthropological linguistics. It demonstrates what each can contribute to the advancement of the other as science. The authors present a close-grained examination of a segment

of an interview recorded in sound. They bring to bear upon a brief interchange between a psychiatrist and his patient the merged learning of what have been separate fields in the study of communication. They present principles of behavior uncovered or reinforced by the use of this new tool. The book's heart is that portion of it where, with the aid of symbols, the authors point to the pronunciation of successive words spoken by the psychiatrist and the patient, to the intonations, the locations, and durations of causes, the hems and haws, the sighs, gasps, coughs, and throat clearings, and to such variables as rates of speech, register, volume, and tone-quality; relate these paralinguistic happenings to the words employed; and, uncovering thereby a wealth of personal and social suggestion, closely discuss what these phenomena signify about two human beings in interaction.

Genetics. Genetic Information and the Control of Protein Structure and Function. Transactions of the First Josiah Macy, Jr., Foundation Conference, October 19-22, 1959, Princeton, New Jersey. Edited by H. ELTON SUTTON. New York: Josiah Macy, Jr. Foundation, 1960. 218 pp. \$6.00.

The titles, with their authors, of the three components of this first conference were as follows: "Current Concepts of the Fine Structure of Chromosomes and the Nature of the Coding Mechanism" by J. D. Watson; "The Genetic Control of Protein Structure" by Vernon M. Ingram; and "Factors Modulating the Biochemical Expression of Genetic Systems" by S. Spiegelman.

Abnormal Psychology. Mental Illness Types, Causes, and Treatment. By WALTER J. COSTELLO, and FABIAN L. ROUKE. New York: Barnes and Noble, Inc., 1960. 284 pp. \$1.75.

This work, in the familiar paper-back College Outline Series, presents a descriptive and interpretative summary of the field of abnormal behavior beginning with the discussion of the differences between the abnormal and the normal, tracing the

history of man's effort to understand deviations in behavior, and analyzing current theories which attempt to explain the development of personality and the causes of mental illness. It is not exclusively oriented toward any one school of thought, although the principal theoretical orientations are so summarized objectively. It includes the main points discussed in fourteen widely used college textbooks in abnormal psychology which are cross-indexed with the outline in the tabulated biography. This book may be used as a basic text to be supplemented by assigned outside reading in accordance with the preferences of the instructor. In preparing this outline, the authors had in mind its usefulness not only to the college student but also the general reader as well as practitioners in the field of personnel, teaching, law, social service, religion, nursing, and the medical specialties.

Quantitative Analysis. By RAY BRUMBLAY. New York: Barnes and Noble, Inc., 1960. 227 pp. \$1.50.

This work, in the familiar paper-bound College Outline Series, is intended to provide in brief form the information usually contained in a one-semester course in quantitative analysis. In addition, a few well established ideas in methods are included. Activities are given relatively more space than is usual in most textbooks because they are fundamental and should be applied to problems in analytical chemistry more frequently than they are. The over-all intention is to state the fundamentals of analytical chemistry, and whenever possible, illustrate them with problems.

Medicine and Morals. By JOHN MARSHALL. New York: Hawthorn Books, 1960. 140 pp. \$2.95.

This book is Volume 129 of the "Twentieth Century Encyclopedia of Catholicism," under Section 13, "Catholicism and Science." The author, a former practicing psychiatrist, is now a reader in clinical neurology in the University of London and is head of the Academic Unit at the Institute of Neurology of that University.

Functional Neuro-Anatomy. Including an Atlas of the Brain Stem. By A. R. BUCHANAN. 4th ed. Philadelphia: Lea & Febiger, 1961. 358 pp. 273 illustrations. \$8.50.

In this fourth edition the policy of a basic textbook presentation of essential material in the least possible number of pages has been continued. Amplification of textual material has been employed minimally, in combination with rewriting, with the objective of clarification of the discussions of certain areas of the central nervous system. This has been particularly true with respect to the thalamus, a brief discussion of which has been concentrated at the beginning of a chapter titled "Diencephalon." This chapter, which was formerly headed "Hypothalamus," also includes a detailed discussion of the hypothalamus. The chapter on "Extrapyramidal Areas of the Cerebral Cortex and Extrapyramidal Pathways" has been moved forward to a position immediately following the discussion of the motor cortex. This has been

done because of the manifold interrelationships between the pyramidal and extrapyramidal systems which interrelationships profoundly affect the symptomatology resulting from lesions involving the "motor pathways." Relatively minor changes have been made in certain of the illustrations. These changes have had as their purpose, clarification and easier interpretation. The functional approach utilized throughout the previous editions of this book is continued.

Books Received

Introduction to Cellular Therapy. By PAUL NIEHANS. Patterson, New Jersey: Pag-eant Books, Inc., 1960. 119 pp. \$3.75.

Biochemistry and Pharmacology of Compounds Derived from Marine Organisms. Edited by ROSS F. NIGRELLI. Annals of the New York Academy of Sciences, Vol. 90, Art. 3, pp. 615-950, November 17, 1960.

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NEWS FROM THE MEDICAL SCHOOLS

Bowman Gray

Dr. COY C. CARPENTER, dean of the school of medicine, has announced expansion of the medical school's graduate program to include the Ph.D. degree in anatomy. Research training is available in the fields of cytology, histochemistry, electromicroscopy, endocrinology and experimental embryology and morphology. The program is contained within the department of anatomy and is under the direction of Dr. NORMAN M. SULKIN, professor and chairman of the department.

Cincinnati

Dr. W. DONALD ROSS and Dr. FREDERIC T. KAPP, associate professors of psychiatry at the college of medicine, were awarded jointly the Franz Alexander Prize given every two years by the Chicago Institute for Psychoanalysis. The award was made at a recent meeting in Chicago. Their prize winning paper, "A Technique for Self-Analysis of Countertransference," presented a refinement of methods of psychotherapy.

Dr. SAMUEL J. NEWMAN, assistant professor of psychiatry and assistant director of child guidance at the Cincinnati General Hospital, died February 11, at age 35.

Colorado

Dr. DONALD W. KING has been appointed professor and head of the department of pathology. He will join the school of medicine staff this spring, coming from Yale University School of Medicine, where he has been assistant professor of pathology since 1956. Dr. King succeeds

Dr. MORGAN BERTHRONG, who resigned to return to private practice in Colorado Springs.

Dr. HENRY SWAN has resigned his position as head of the department of surgery to devote more time to teaching and research. Dr. W. KEASLEY WELCH, head of the division of neurosurgery has been named acting head of the department of surgery.

Cornell

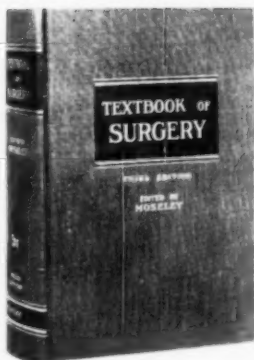
Dr. WALLACE W. MCCRORY, professor and chairman of the department of pediatrics at the State University of Iowa College of Medicine, has been named to the corresponding post at Cornell's Medical College. He will also be pediatrician-in-chief of The New York Hospital. The appointment becomes effective July 1, when he will succeed Dr. SAMUEL Z. LEVINE.

Jefferson

Dr. CARROLL R. MULLEN, professor of ophthalmology and chairman of that department, died February 1, at age 60. A charter staff member of the Fitzgerald-Mercy Hospital, he was also attending ophthalmologist-in-chief at Jefferson Hospital and a consultant at Philadelphia General, the Veterans Hospital, Philadelphia, and J. Lewis Crozier Hospital, Chester, Pa.

Dr. KARL E. PASCHKIS, professor of physiology and clinical professor of medicine, died January 27. Educated in Vienna, Dr. Paschkis came to the United States in 1930 and joined the Jefferson medical faculty in 1940.

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Edited by **H. FRED MOSELEY, M.A., D.M., M.Ch. (Oxon), F.A.C.S., F.R.C.S. (Eng.), F.R.C.S. (C).** With 40 contributors. 1959, 3rd edition, 1336 pages, 6 $\frac{7}{8}$ " x 10", 738 text illustrations, 108 color plates. Price, \$17.00.

2nd Edition **Ackerman** **SURGICAL PATHOLOGY**

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By **LAUREN V. ACKERMAN, M.D.**, in collaboration with **HARVEY R. BUTCHER, JR., M.D.** 1959, 2nd edition, 1096 pages, 6 $\frac{3}{4}$ " x 9 $\frac{3}{4}$ ", 1114 illustrations. Price, \$15.00.

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Miami

The school of medicine has received more than \$60,000 from pharmaceutical concerns and professional organizations to help Cuban physicians in a special postgraduate refresher course in medicine. Dr. RALPH JONES, Jr., professor and chairman of the department of medicine and organizer of the postgraduate program, said that the funds would be used to provide scholarship assistance, faculty stipends, textbooks, and bilingual equipment. Contributions include \$40,000 from the International Telephone and Telegraph Company; \$10,000 from the Mead Johnson Company, for ten scholarships to Cuban physicians to permit them to study and teach in the medical school; \$6,000 from the American College of Surgeons; and \$5,000 from the Educational Council for Foreign Medical Graduates. A large supply of American medical textbooks, translated into Spanish, have been supplied by the W. B. Saunders Company, medical publishers.

Michigan

Dr. WALTER P. WORK, of the University of California School of Medicine (San Francisco), has been named chairman of the department of otolaryngology at the University of Michigan Medical School. Dr. Work, whose appointment becomes effective July 1, succeeds the late Dr. JAMES H. MAXWELL. His appointment will bring him back to the University after a 20-year absence. Dr. Work served as instructor in otolaryngology at Michigan from 1939 to 1941, then joined Stanford's School of Medicine. In 1959 he was appointed associate clinical professor at the University of California School of Medicine in San Francisco.

Minnesota

Dr. JEROME T. SYVERTON, head of the department of bacteriology and immun-

ology at the medical school, died of a heart attack in New York, January 29. Dr. Syverton was considered one of the country's topflight investigators. Dr. ROBERT B. HOWARD, the school's dean, said Dr. Syverton's virus work had brought him international distinction, and that he was one of those who had been most successful in developing methods to keep body cells alive under laboratory conditions. This is considered a possible key to major break-throughs for cancer control. Dr. Syverton, 53, had been on the Minnesota faculty since 1948.

Dr. OWEN H. WANGENSTEEN, chairman of the department of surgery was named the first Donald Church Balfour visiting professor in the Mayo Foundation February 20-22. The visiting professorship, first of its kind to be conferred by the Mayo Foundation, is named in honor of Dr. DONALD C. BALFOUR, head of a section of surgery in the Mayo Clinic from 1912 to 1937, professor of surgery in the Mayo Foundation and director of the Mayo Foundation from 1937 until his retirement in 1947.

Mississippi

Dr. DAVID S. PANKRATZ, dean of the University of Mississippi School of Medicine since 1946 and director of the university's medical center since 1954, left the university February 16, to join the staff of a new state neuropsychiatric hospital in Tennessee, where he will be a senior staff member and consultant for the hospital now under construction in Memphis. Dr. Pankratz was one of the leaders in the successful campaign for the establishment of a four-year medical school in Jackson.

Missouri

Dr. JOHN MODLIN was appointed professor and chairman of the department of surgery. Dr. Modlin has been in pri-

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vate practice of surgery in Columbia and on the clinical faculty of the school since 1952. He has been in charge of the university's cancer registry since it was established at the Medical Center in July, 1959. In his new position he succeeds Dr. HUGH STEPHENSON, Jr., who relinquished the chairmanship last September.

New York University

Announcement has been made of the appointment of Dr. RUDOLF L. BAER as chairman of the department of dermatology and syphilology. In addition, Dr. Baer will assume duties as director of the dermatology and syphilology service at the New York University Hospital, including the Skin and Cancer Unit; and visiting physician-in-charge of the dermatology and syphilology service at the Bellevue Hospital Center.

Northwestern

Northwestern University honored three of its faculty members recently for their "outstanding achievement in medicine." Citations were awarded to Dr. SAMUEL M. FEINBERG, professor of medicine; Dr. LOWELL D. SNORF, professor emeritus of medicine; and Dr. DON C. SUTTON, professor emeritus of medicine.

Dr. Feinberg has served on Northwestern's medical faculty for 39 years; Dr. Snorf was a faculty member for 35 years; and Dr. Sutton was a member of the faculty for 44 years.

Pennsylvania

Dr. ROBERT PRENTICE GLOVER, assistant clinical professor of surgery at the medical school and chief of the departments of thoracic and cardiovascular surgery at Presbyterians, St. Christopher's and Fitzgerald-Mercy Hospitals, died February 1. He was 47 years old. Dr. Glover was founder of the Cardiovascular Research Foundation and of the Glover

Clinic for Thoracic and Cardiovascular Diseases.

The University of Pennsylvania School of Nursing will initiate a program in September leading to the degree of Master of Science in Nursing, according to a recent announcement by the school's dean, Dr. THERESA I. LYNCH. The new program will be under the direction of associate professor FRANCES C. THIELBAR. It will replace the graduate courses now offered in the university's School of Education which led to the master of science degree with a major in nursing education.

Pittsburgh

The university has received a seven-year grant from the Public Health Service for a research program in medical care and hospital administration. The award, totaling \$734,144, has been made to Pitt's Graduate School of Public Health to support research activities in the general areas of manpower for medical and hospital services; the utilization of medical and hospital services; and the development and evaluation of medical care programs.

Dr. CECIL G. SHEPS, professor of medical and hospital administration and director of the Program in Medical and Hospital Administration, is principal investigator. Dr. ISIDORE ALTMAN, professor of medical care statistics, is co-investigator.

A major purpose of the program will be to provide an opportunity for graduate students—in medical and hospital administration, public health, biostatistics, and social sciences—to obtain research training and experience in medical care settings.

Stanford

The medical school is adding two professors and five associate professors to its full-time faculty.

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Dr. E. DWIGHT BARNETT, former administrator for the Palo Alto-Stanford Hospital Center, will serve as clinical professor of administrative medicine in the department of preventive medicine. Coming from Louisiana State University where he is associate professor in the department of pharmacology is Dr. TAG ELDIN MANSOUR. Dr. Mansour's appointment as professor of pharmacology on the Stanford faculty is effective April 1.

Dr. THOMAS A. STAMEY will join the Stanford faculty on July 1, as associate professor of surgery, heading the new division of urology in the department of surgery. Dr. Stamey has been associate professor of urology at The Johns Hopkins University Medical School since last year and chief of urology for the Baltimore City Hospitals since 1958. Dr. KAO LIANG CHOW was appointed associate professor of medicine (neurohistochemistry), and Dr. WILLIAM VAN BOGAERT ROBERTSON was named associate professor of biochemistry in the department of pediatrics. Dr. Chow had been associate professor of physiology at the University of Chicago since 1954. Dr. Robertson's major role at Stanford is as director of the laboratories and research program at the Stanford Convalescent Home. He had been on the medical faculty at the University of Vermont College of Medicine since 1947.

Two other long term appointments will be effective in early summer and at the beginning of the next academic year.

Dr. ELLIS N. COHEN has been appointed associate professor of anesthesia starting July 1. He is presently associate clinical professor of anesthesiology at the University of Minnesota.

European-trained pathologist Dr. BRUNO GERSTL has been appointed associate professor of pathology beginning September 1. Dr. Gerstl will be in charge of laboratory services in the Palo Alto Veterans Administration Hospital. He

has been chief of laboratory service at Oakland Veterans Hospital and assistant clinical professor of pathology at the University of California since 1947.

S. U. N. Y. (Brooklyn)

New appointments to the faculty were announced recently by Dr. ROBERT A. MOORE, President and Dean of the Downstate Medical Center.

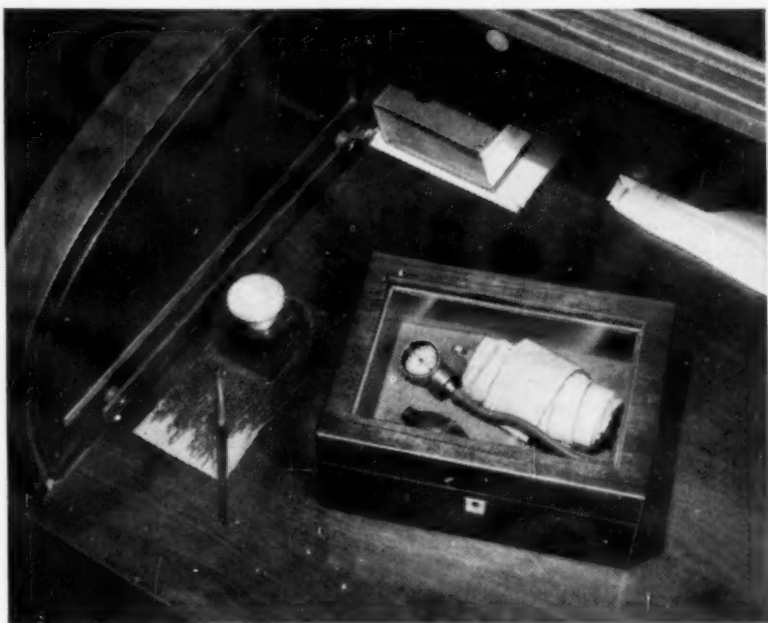
Named professorial lecturer in psychiatry was Dr. BERTRAM D. LEWIN, former faculty member at Cornell Medical School. Dr. Lewin is presently on the teaching staff of the New York Psychoanalytic Institute. Dr. BRUNO W. VOLK, director of laboratories at the Jewish Chronic Disease Hospital, and Dr. ISRAEL DIAMOND, director of laboratories at the Lutheran Medical Center, were appointed clinical associate professors in pathology. Dr. Volk is also visiting associate professor of pathology at Albert Einstein College of Medicine. Dr. Diamond, was until recently, associate professor of pathology at the University of Louisville School of Medicine.

Temple

Ground-breaking ceremonies for Temple University's new \$4.5 million Medical Research Building were held February 8, with Dr. MILLARD E. GLADFELTER, university president, officiating. Others participating included Dr. FRANCIS SCHMEHL, chief of the Health Facilities Branch of Public Health Service, and Mr. LEWIS STEVENS, President of the Samuel S. Fels Fund.

The university recently received a grant of \$400,000 from the Samuel S. Fels Fund for construction of two floors to house the Fels Research Institute in the new research building. The nine-story research building is scheduled for completion sometime in 1962.

Dr. WILLIAM N. PARKINSON, vice pres-



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ident in charge of the Temple University Medical Center, is retiring after more than 35 years of service. Dr. Parkinson, who has held various posts of leadership at Temple University, including that of dean of the medical school for 30 years, has been named dean emeritus of the school. In announcing Dr. Parkinson's retirement, Dr. Gladfelter said, "To Dr. Parkinson we attribute every advance in medical education at Temple University."

Tulane

The school of medicine has created the Edgar Burns Visiting Professorship in Urology in honor of the urologist who served for 12 years as head of the division of urology at Tulane. The first incumbent is Dr. HARTWELL HARRISON, professor of genito urinary surgery at Harvard Medical School. He will be at Tulane March 26 to April 1, lecturing and conducting ward rounds and demonstrations in the division of urology. The division has been headed by Dr. JORGEN U. SCHLEGEL since September, 1960, when Dr. Burns reached retirement age.

Vermont

New fields of research will be launched with the establishment of an electron microscope laboratory at the college of medicine. The laboratory is being made possible by a \$93,000 National Institutes of Health grant to the university. Dr. FRED W. DUNIHUE, professor of anatomy, will be project leader. He expects to undertake a project of study involving the kidney and heart. Students will also be taught how to use the microscope as part of their training which, Dunihue believes, will enrich their overall medical background.

Washington University (St. Louis)

Dr. H. N. EISEN has been named head of the department of microbiology. Though the appointment is effective im-

mediately, Dr. Eisen will not assume his duties until July 1. He has been a member of the medical school staff since accepting the position of professor of medicine and head of the division of dermatology in 1955.

Wayne State

Graduate assistantships for masters and doctoral students in microbiology will be offered at Wayne State University's College of Medicine beginning in September, 1961.

Dr. FRED L. RIGHTS, chairman of the microbiology department, also announced an undergraduate summer training program designed to acquaint qualified students with the career opportunities in this area while serving as research assistants. Career possibilities in microbiology include medical bacteriology, immunology, virology, bacterial physiology, parasitology, and mycology.

Majors in biology, bacteriology or chemistry with two or more years of undergraduate training are eligible for the summer training program. The stipend is \$500 for 10 weeks. Application forms, which must be made by May 1 for both programs, may be obtained from Dr. Rights, chairman, department of microbiology, Wayne State University College of Medicine, Detroit 7, Michigan.

Dr. ARTHUR J. VORWALD, professor and chairman of the department of industrial medicine and hygiene, received the highest honor of the American Academy of Occupational medicine at a recent meeting of the organization. Only the fourth time in the 15-year history of the Academy that this honor has been given, Dr. Vorwald was cited for his outstanding contributions to occupational medicine.

Western Reserve

An endowed chair in orthopedic surgery has been established at the medical school, and named as its first incumbent



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1. *J. Lab. & Clin. Med.*, 45:679, 1955. 2. *J.A.M.A.*, 173:333, 1960.
3. *New England J. Med.*, 263:1058, 1960.

is Dr. CHARLES H. HERNDON. Dr. Herndon is associate professor of orthopedic surgery.

Two new appointments to the faculty include Dr. MARCUS SINGER, who was named Henry Willson Payne professor of anatomy and director of the department, and Dr. HOWARD A. SCHNEIDER-

MAN, who was named professor of biology. Both appointments will be effective July 1, 1961. Dr. Singer is currently professor of zoology and of child development and family relationships at Cornell University. Dr. Schneiderman is now associate professor of biology at Cornell.

ITEMS OF CURRENT INTEREST

57th Congress on Medical Education and Licensure

The family physician is rapidly disappearing from the American scene, according to Dr. Herman G. Weiskotten, dean emeritus of the State University of New York (Syracuse) College of Medicine.

Dr. Weiskotten made this observation before the opening session of the 57th Annual Congress on Medical Education and Licensure in the Palmer House, Chicago. The future of the family practice of medicine came under the scrutiny of approximately 1,200 physicians, medical examiners and medical educators during the three-day conference, February 5-7. The conference was sponsored by the American Medical Association's Council on Medical Education and Hospitals, the Advisory Board for Medical Specialties, and the Federation of State Medical Boards of the United States.

Recognizing that vast improvements in the over-all care of the American public have resulted from a trend toward specialization, and "without such specialization the development of much new knowledge and its application in the prevention and treatment of disease could not have materialized," Dr. Weiskotten indicated that the pendulum has swung too far to one side. He expressed concern over the sharp decline in the number of general practitioners and said, "the time has now come for serious consideration of the

problem," brought about by the increase in specialists.

Dr. Weiskotten pointed out that only 32 per cent of 1950 medical school graduates are in any way engaged in general family care today, as opposed to 70 per cent of the 1939 class, and most general practitioners from the 1950 class practice in small towns.

Of the family doctor now practicing, Dr. Weiskotten revealed that 70 per cent had entered active practice after only one year of internship, which he called "entirely inadequate."

"The public is already complaining of a lack of availability of family physicians. Most people make their own diagnosis and then choose the specialist to fit the case," he said. Dr. Weiskotten believes that even now we are not yet beginning to feel the full impact of recent trends as a large number of older physicians are still in private practice.

Dr. John S. DeTar of Milan, Mich., past president of the American Academy of General Practice, offered possible solutions to the problems posed by Dr. Weiskotten by calling for a two-year internship program to replace the present practice of a year's rotating internship. Reporting on decisions of a committee on preparation for general practice organized by the AMA, Dr. DeTar said

the proposed program aims to prepare doctors more adequately for the family practice of the future. When generally adopted, the program "will revolutionize the entire field of internship and residency training," Dr. DeTar said.

The internships came under more fire later in the day when Dr. Ralph S. Snyder, dean of the New York Medical College, and Dr. Robert M. Bucher, dean of Temple University School of Medicine, spoke against the internship, suggesting that it be abolished or that a "more profitable program" be substituted. Both men called the internship outdated. Dr. Snyder contends that most of the educational values of the internship have been or can be incorporated into the modern medical college curriculum. "In medicine, education and service go hand in hand. In the internship, service, more often than not, superseded education and is not controlled," Snyder said.

Speaking in defense of the internship, Dr. John Z. Bowers, dean of the University of Wisconsin Medical School, and Dr. Albert W. Snoke, professor of hospital administration, Yale University School of Medicine and director, Grace-New Haven Community Hospital, agreed that it is important in the training of doctors.

Dr. Bowers said that the internship offers the ideal opportunity for the proper orientation to comprehensive care of the patient as a whole, with due consideration given to the psychological, social, and economic aspects of his illness. Speaking for Dr. Alfred A. Angrist, who was unable to attend the conference, Dr. Bowers said that only a good mixed internship, not the clerkship or residency, or the straight service yields this important over-all approach to the whole patient and the development of intuition, judgment, and empathy for the sick. In his paper, Dr. Angrist believes a concerted effort should be toward improve-

ment of the internship, not abandonment. Dr. Angrist is professor and chairman of the department of pathology, Albert Einstein College of Medicine.

While the pros and cons of the internship were being deliberated, simultaneous debates were taking place on whether or not the growing emphasis on research by faculty and students has improved the medical education of undergraduates in medical schools.

As a proponent of research, Dr. Philip Handler, professor and chairman of the department of biochemistry and nutrition, Duke University School of Medicine, maintains that those medical educators who are constantly engaged in research are best equipped for the task of imparting knowledge to the student. "Increased research activity has increased the quantity and enhanced the quality of teaching because of research funds which have been used to retain additional numbers of talented young men and women on the teaching faculties," he declared. Dr. Handler asserts that as a result of research grants, students have access to the best scientific equipment. Schools lean heavily on the use of so-called research funds to accomplish their prime function, medical education, he said.

Also speaking in favor of research, Dr. Carl Moyer, professor and chairman of the surgery department, Washington University School of Medicine (St. Louis), believes that the research experience during medical school is conducive to the continuance of productive investigation by general practitioners of medicine. He contends that the non-teaching practitioner of medicine and surgery still has remarkable opportunities for contributing to medical knowledge, provided he is prepared to do so with research experience during medical school.

Dr. William H. Resnik, clinical professor of medicine, Yale University School of Medicine, and Dr. William Dock, pro-

fessor of medicine, State University of New York Downstate Medical Center, assailed the growing emphasis on research as they contend it has not exerted a beneficial effect on medical education because it has diminished the importance of teaching and clinical ability. Further, according to Dr. Resnik's paper, which was delivered by Dr. Dock, it has diverted into research many persons who have little or no aptitude for it, who are incapable of discovering and attaching significant problems. Dr. Resnik deplores the large sums of money that are lavished on "uninspired" research, calling it a futile waste of funds that could be employed in a far more constructive way.

OBSTETRICS, OPERATIVE GYNECOLOGY, AND SURGERY IN GENERAL PRACTICE

More and better formal training in general practice was urged by Dr. John G. Walsh of Sacramento, Calif. Dr. Walsh, who is president of the American Academy of General Practice, cited the aims of the AAGP in striving to elevate the practice of medicine and surgery as it relates to the general practitioner. He said, "the goal is to produce general practitioners who are not competing with specialism, but rather physicians who maintain the same standards of practice in each of the common areas (obstetrics, pediatrics, and internal medicine) of medicine or surgery."

In assessing the situation, Dr. Walsh wonders if the trend toward concentration in the specialty fields of medical and surgical practice in the university centers hasn't produced a simultaneous neglect in the standards for the general practice of medicine and surgery. In the light of this, he also wonders if another "Flexner" survey isn't needed to determine the adequacy of medical education in the field of general practice.

In view of the public's demand for more family doctors, Dr. Walsh believes

the general practitioner should be thoroughly trained in the techniques of obstetrics and surgery, thus obviating the need for referral. He suggested that two years of surgical training following the two-year minimum program could, if properly supervised, adequately equip the future general practitioner for various surgical operations.

HOUSE OFFICERS' CARE OF PATIENTS

Critics of the quality of patient care under the house office training program were told by a University of Illinois educator to look to possible defects in the quality of teaching within that program. Dr. Norman B. Roberg, professor of medicine, acknowledged that there may be some basis for complaints, but believes they represent inadequacies of earlier education, coupled with the dynamic imbalances during a period of rapid development.

Citing the principal complaints—that some house officers are inconsiderate of their patients' psychological and emotional needs—and that patients suffer because the house officers do not possess adequate technical skills and are schooled only in the scientific and theoretical aspects of disease, Roberg reminded his audience that the medical school is not designed to impart a liberal education in the humanities; the objective of the four years of medical school is the inculcation of the discipline and substance of medical science. He therefore contends that, "if we expect our house officers to develop rapidly, and give excellent and considerate care to their patients, we must require that they enter the training program soundly educated in medical science, and that they leave it as physicians of demonstrated competence."

Dr. Roberg lashed out against the salaries paid the house officers. "These physicians, while they are in training, are essential to almost all the care which

the patients receive," he said. And continued, "hospitals could not operate without them, and from them we have our only source of practitioners, teachers, and investigators . . . yet they are asked to support their families on \$200 or \$300 a month. He concluded, "the failure of our society to support our best young physicians helps explain why today 800 academic positions remain unfilled."

DECREASING ROLE FOR PRACTICING PHYSICIAN IN CLINICAL TEACHING

"It would be disastrous to exclude part-time teachers from the clinical departments," argued Dr. Arnold S. Relman, associate professor of medicine, Boston University School of Medicine, as the debate on whether or not the practicing physician should be assigned a decreasing role in the clinical instruction of medical students, got under way. Dr. Relman asserted that it would separate the teaching of medicine and the practice of medicine in university hospitals from the real world.

Dr. Lamar Soutter, dean and professor of medicine, Boston University School of Medicine, supported this statement by declaring that combining the practitioners' teaching with that of the clinicians, a better rounded faculty is achieved, because "the clinician's approach to teaching is more oriented to the laboratory."

Opposing these theories were Drs. Nathan A. Womack and John H. Mulholland. Dr. Womack, who is professor and chairman of the department of surgery, University of North Carolina School of Medicine, avers that if a degree of excellence is to be preserved, it can only be done so by maintaining full-time clinical teachers. He contends that the duties of a practitioner are becoming so burdensome in today's society that it is difficult to keep abreast of the ever constant changes in medicine.

GRADUATE TRAINING IN NON-UNIVERSITY HOSPITAL?

While the merits of the practicing physician as a teacher were being disputed, simultaneous debates were conducted on the values of the non-university hospital as a training ground for graduate medical students.

Arguing in favor of the community hospital, Dr. Walter L. Bloom, director of medical education and research at the Piedmont Hospital in Atlanta, Georgia, and Dr. John G. Freymann, director of medical education of Memorial Hospital, Worcester, Mass., agreed that the student is afforded a distinct advantage for professional growth in the areas of relations—doctor to patient, and doctor to doctor. Since the community hospital has a singleness of purpose—to take care of patients—the graduate medical student, Freymann declared, gains in educational experience as he is charged with the responsibility of patient care while under careful supervision. "Community hospitals have led the way in the use of private patients for graduate medical education," Freymann said.

Drs. John E. Deitrick and Arthur R. Colwell pointed out the assets of the university affiliated hospital—the faculty (full-time and part-time), library, presence of research laboratories and most important, the presence of medical students. Dr. Colwell, professor and chairman of the department of medicine at Northwestern University's Medical School, said a staff which is devoted to teaching even more than to practice, produces independent, critical thinkers—and this applies to social, economic, and personal matters as well as scientific. He believes the important point is that the student should be a scholar and not an apprentice. Dr. Colwell charged that many non-affiliated institutions and their staffs do not even know what this means. "Some control over volume and variety

of patients can be exerted in hospitals staffed primarily for teaching, whereas selection of clinical material is difficult if not impossible in institutions whose primary responsibility is service to the patient," Dr. Colwell said. He added, "well organized outpatient clinics are uncommon in unaffiliated hospitals, while affiliated ones use them routinely for teaching and training and to supply selected patients to the hospital."

Dr. Deitrick, dean and professor of medicine, Cornell University Medical College, flatly stated that the learning advantages so overshadow the few unique and relatively unimportant opportunities in the non-university hospital that a majority of young men would be wasting their time if they were to spend a portion of it training in non-university hospitals.

Dr. Freymann countered these attacks by stating that community hospitals have all the facilities plus the advantages of supervised and individual instruction by senior practicing physicians.

MEDICAL EDUCATORS WARNED OF PUBLIC HOSTILITY

If organized medicine doesn't take immediate steps to police its own ranks, the government will end up doing it for them, warned Dr. Harold E. Jervy, Jr., president of the Federation of State Medical Boards of the United States.

Speaking at final sessions of the Congress, Dr. Jervy said that for 4,000 years the attitude of the public toward physicians has fluctuated between God-like veneration and man-made criticism, and that people have always expected more from doctors than from other mortals.

The pendulum is again swinging, he said, and "rather than leniency toward the physician, the public is again looking with more critical appraisal on his human

failings and delinquencies and is demanding increased severity of punishment." In citing the deficiencies, he assailed the wide-spread apathy, ignorance and lack of sense of responsibility by physicians as a whole. Dr. Jervy said two to three per cent of the nation's 252,295 practicing physicians are guilty of legal violations and that 15,000 to 20,000 others engage in unethical practices. The figures, he asserted, are not exaggerated. If anything they are too conservative, he concluded.

Kennedy Asks Aid for Medical Schools

In outlining his comprehensive program for federal health action in a message to Congress last month, President John F. Kennedy called for substantial aid to medical schools and medical students.

President Kennedy envisions a \$700 million program of aid to medical and dental schools as part of a 10-year plan to end a developing shortage of physicians and dentists. It was understood the administration hopes to provide some 20,000 such scholarships in the next four years. An immediate program of planning grants, which officials said would cost \$500,000, would go toward helping academic institutions plan new facilities.

Congressman John E. Fogarty, in his message to Congress on January 25, is continuing his plea to provide Federal financial assistance in the expansion of existing professional schools and to aid in the construction of the needed new schools, and to provide medical and dental scholarships.

Proposed legislation calls for 1) A block grant of \$100,000 a year to each school of medicine and dentistry which provides training leading to a medical or dental degree. To schools offering only 1, 2 or 3 years of such training, grants of \$25,000, \$50,000, or \$75,000 would be paid annually. 2) Annual payments of

Individual Membership

in the

Association of American Medical Colleges

In recent years the activities of the Association of American Medical Colleges have expanded far beyond the original considerations of administrative problems to the many and varied problems of medical education as encountered by the entire medical school faculty.

The expansion of activities has been due to the growing complexity of medical education—the swift development of the medical sciences, the rapid accumulation of new knowledge to be taught, the pressure for more graduates, the changing patterns of medical care, and countless other factors.

Because of these factors, the AAMC recognizes the need for a professional organization to represent not only the medical schools but the faculty members of these schools. Through the offering of individual membership, the AAMC provides you with the opportunity to exchange ideas, opinions and information through the Annual Meeting, Teaching Institutes, and other activities of the Association.

The AAMC also encourages you to attend the Annual Meeting, not only to meet with others who are teaching in your field and discussing the educational problems that are peculiar to it, but also with the idea of becoming familiar with the entire field of medical education as one of society's most important enterprises. The time has come when teachers of medicine must meet together and discuss the problems and activities that are peculiar to medicine as education just as they are accustomed to meet and talk about medicine as science.

As an Individual Member you are entitled to receive *The Journal of Medical Education*, the only publication devoted exclusively to medical education. The Journal also carries the latest news from the medical schools and provides a valuable service through its Personnel Exchange column. You receive the yearly *Directory*, the *Proceedings of the Annual Meetings*, and a monthly newsletter which will keep you informed on items of current interest in the field of medical education, both nationally and internationally.

Individual Membership, at only \$10 a year, is open to any person who has demonstrated a serious interest in medical education over a period of years. All the privileges of membership and a provisional membership card are granted immediately after payment of the \$10 fee, although confirmation must await official action at the next Annual Meeting.

To obtain membership, fill out the application form below, append check for \$10, and return to the Association's central office at 2530 Ridge Ave., Evanston, Ill.

INDIVIDUAL MEMBERSHIP APPLICATION

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

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Name: _____

Mailing Address: _____

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(Zone)

(State)

Field of medical education in which chief interest lies: _____

College or other connection: _____

\$500 to all schools of medicine and dentistry for each student enrolled. 3) An additional payment of \$500 to the schools for each student enrolled in excess of its average past enrollment. This additional payment would be computed on the basis of limitations set forth in the legislation. 4) Establishing in the Public Health Service a National Council on Education for Health Professions to advise and assist the Surgeon General in the preparation of general regulations and on policy matters arising in the administration of these grants.

California Maps Expansion of Medical Education

A plan for expansion of state-supported medical education in California was announced recently by the regents of the University of California.

The plan, aimed at upping the number of medical students graduated yearly in the state, calls for 1) A new medical school with a student body of 400 to be located in San Diego; initial cost for the new school was set at \$24,300,000. 2) Expansion of the University of California School of Medicine at Los Angeles, to add facilities for 296 more students to the present total of 216; cost is estimated at \$44,800,000, and 3) Expansion of the University of California School of Medicine in San Francisco to add facilities for 154 more students, at an estimated cost of \$24,400,000.

Funds for the regents' program must still be appropriated by the California State Legislature. If the plan is carried out, about 215 new physicians would be added to the 415 now graduated by all medical schools in California.

Financial Aid to Medical Students

Approximately \$1.1 million will be distributed by the Avalon Foundation to each of the 86 U.S. medical schools for student scholarships. It is the first

grant by any foundation for medical student scholarships across the board.

The amount available to each four-year school varies from a minimum of \$10,000 to a maximum of \$16,000—contingent on the size of the student body and scholarship funds currently at the disposal of each school.

According to Dr. Thomas Parran, president of Avalon Foundation, "the grants are an unrestricted supplement to the scholarship funds of each medical school, to be expended in conformity with the school's policy and to be available until expended for nonrefundable grants to students." Scholarship aid is to be granted to students on a combined basis of financial need and scholarship attainment. The grants are designed to attract more students and more competent students to the study of medicine and to help meet the pressing need for more physicians in the United States.

The appropriation follows a five-year grant of \$150,000 recently made by the Avalon Foundation to the Association of American Medical Colleges to strengthen its program for the sound development of new medical schools and the expansion of existing schools.

Research Fellowships Available

The Helen Hay Whitney Foundation is announcing the availability of fellowships to any properly qualified person in the United States or abroad, up to the age of 35, holding the M.D. or Ph.D. degree, or their equivalent, who is seriously considering a career in biological or medical research, preferably related in some way to connective tissue and its diseases. The fellowships are annual, subject to renewal consequent to good performance for a period of three years. The stipend is \$6,000 per annum, plus \$500 for each dependent. Further information may be obtained by writing to The Helen Hay Whitney Foundation, 525 E. 68th St.,

PUBLICATIONS

of the

ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Useful information for both medical educators and students is published by the Association of American Medical Colleges. These publications may be obtained from the Association Headquarters office, 2530 Ridge Avenue, Evanston, Illinois.

BOOKS AND PAMPHLETS

Admission Requirements of American Medical Colleges—1960-61 (\$2.00).

History of the Association of American Medical Colleges—1876-1956.

Financial Assistance Available for Graduate Study in Medicine (\$2.50).

Medical Schools in the United States at Mid-Century (\$4.50).

Education of Physicians for Industry (\$2.00).

A Study of Medical College Costs (\$1.50).

Medical Education for Foreign Scholars in the Medical Sciences (\$1.50).

Film Catalog

THE JOURNAL OF MEDICAL EDUCATION

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TEACHING INSTITUTE REPORTS (\$2.00 paperbound, \$3.00 clothbound).

Report of the Conference on Preventive Medicine in Medical Schools (Report of the 1952 Institute).

The Teaching of Physiology, Biochemistry and Pharmacology (Report of the 1953 Institute).

The Teaching of Pathology, Microbiology, Immunology and Genetics (Report of the 1954 Institute).

The Teaching of Anatomy and Anthropology in Medical Education (Report of the 1955 Institute).

The Appraisal of Applicants to Medical School (Report of the 1956 Institute).

The Ecology of the Medical Student (Report of the 1957 Institute).

Report of the First Institute on Clinical Teaching (Report of the 1958 Institute).

Report of the Second Institute on Clinical Teaching (Report of the 1959 Institute).

PUBLICATIONS OF RELATED ORGANIZATIONS

Hospitals Participating in the Matching Program 1961 (NIMP).

Results of the Matching Program 1961 (NIMP publication).

The Student and the Matching Program 1961 (NIMP publication).

Medical College Admission Test—Bulletin of Information 1961 (Psychological Corporation).

In addition to the above publications, the American Psychiatric Association, 1785 Massachusetts Ave., N.W., Washington, D.C., still has available copies of the two Institutes on the teaching of psychiatry: Psychiatry in Medical Education—1951 Conference (\$1.00) and the Psychiatrist: His Teaching and Development—1952 Conference (\$2.50).

New York 21, N. Y. Applications must be received on or before August 15.

Head of World Medical Group Dies at Parley

Dr. Heinz Lord, 43, president of the World Medical Association, died February 4, of a heart attack while attending the Congress on Medical Education and Licensure at the Palmer House, Chicago. He became president of the WMA January 1.

A native of Hamburg, Germany, Dr. Lord practiced surgery there before coming to the United States in 1953. He had served on hospital staffs in Bridgeport, Conn., and in Barnsville, O.

Training Programs in Medical Librarianship

The Public Health Service has awarded five-year grants for graduate training in medical librarianship to the A. W. Calhoun Medical Library, Emory University School of Medicine, and to the Biomedical Library, University of California, Los Angeles. Three traineeships are available at each library as of January 1, and may be activated at any time thereafter. They provide support for a year of planned library training combined with opportunity to enroll in a limited number of courses in the biomedical sciences, foreign languages, or librarianship.

Applicants must be citizens of the U.S. (or have received first citizenship papers) and graduates of American Library Association accredited graduate library schools.

Requests for application forms and further inquiries should be addressed for the Emory program to: Miss Mildred Jordan, A. W. Calhoun Medical Library, Emory University School of Medicine, Atlanta 22, Ga. For the U.C.L.A. program, write to: Miss Louise Darling, Biomedical Library, University of Cali-

fornia Medical Center, Los Angeles 24, California.

\$10 Million Research Program for Heart Association

More than \$10 million will be spent by the American Heart Association and its affiliates to support scientific research in the coming fiscal year, according to the Association's president Dr. Oglesby Paul. Dr. Paul said this will be the largest research program in the 13-year history of the voluntary health organizations.

The 1961-62 research program was launched with awards by the American Heart Association of more than \$2 million in fellowships to 179 scientists for a broad range of basic and applied studies in the field of heart and blood vessel diseases. New awards are effective July 1.

The Heart Association's 1961 Annual Meeting and Scientific Sessions will be held at the Americana Hotel in Bal Harbour, Miami Beach, Fla., October 20-24. May 15, has been set as the deadline for submitting abstracts of papers to be presented at the Scientific Sessions. Official forms for submitting abstracts may be obtained from Dr. Richard E. Hurley, Medical Associate, American Heart Association, 44 E. 23rd St., New York 10, N.Y.

Research Grants on Alcoholism Available

The Scientific Advisory Committee to Licensed Beverage Industries, Inc., recently announced that it had awarded grants totalling almost \$100,000 to 20 research applicants during the first year of a five-year \$500,000 program designed to stimulate and support alcohol studies.

The Committee announces that it now welcomes applications for grants-in-aid under its 1961 budget.

Further information may be secured

by writing to the Scientific Advisory Committee to the Licensed Beverage Industries, Inc., 155 E. 44th St., New York 17, N. Y.

University of Texas Chancellor to Head American Council on Education

Dr. Logan Wilson, chancellor of the University of Texas, was elected president of the American Council on Education at a recent meeting of the membership. Dr. Wilson succeeds Dr. Arthur S. Adams, who became Council president in 1951. Dr. Wilson assumes leadership of the Council, an organization with a membership of more than 1,200 educational institutions and organizations, after eight years service at the University of Texas.

USAF Aerospace Medical Center at Brooks Under New Command

Brig. Gen. Theodore C. Bedwell, Jr., has succeeded Maj. Gen. Otis O. Benson, Jr., as Commander of the USAF Aerospace Medical Center at Brooks Air Force Base, Texas. General Bedwell, who comes to his new assignment from duty as Chief Surgeon of the Strategic Air Command, heads up Air Training Command's Aerospace Medical Center, which consists of the Air Force School of Aviation Medicine at Brooks, the USAF Hospital and Epidemiological Flight Laboratory at Lackland Air Force Base, and the Medical Services School at Gunter Air Force Base, Ala.

PERSONNEL EXCHANGE

Faculty Vacancies

PATHOLOGIST: Midwest medical school. Teaching of anatomical and clinical pathology. Interest and experience in research desirable. Academic rank based upon qualifications. Salary with consultation privileges. Address: V-106.

MICROBIOLOGIST: Applications are invited for consideration to a position as departmental chairman and professor of microbiology at the State University of South Dakota School of Medicine, Vermillion, S.D. Correspondence may be directed to the Office of the Dean.

ASSOCIATE PATHOLOGIST: VA General Hospital associated with Duke University School of Medicine seeks a pathologist certified in clinical pathology who will direct residents in clinical pathology and will carry on research in one of the branches in clinical pathology. Faculty appointment appropriate for qualifications. Expanding research program. Salary \$14,041 to \$17,200. Write to Roger Baker, M.D., VA Hospital, Durham, N. C.

ANESTHESIOLOGIST: Full time appointment as Assistant Chief VA Hospital closely affiliated with medical school. Opportunity for teaching, research, and clinical experience in all physician service. Full resident staff. Licensure (but not necessarily in Utah) required. Prefer board certification. Salary depends on qualifications, \$10,635 to \$15,790 plus other benefits. Include curriculum vitae or VA application in letter. Contact: Carter M. Ballinger, M.D., Division of Anesthesiology, University of Utah, Salt Lake City, Utah.

PHYSIOLOGIST: Applications are invited for the position of Assistant Professor of Physiology, salary dependent on qualifications, \$6,000 minimum. Preference will be given to applicant with special knowledge of biophysics. Opportunity for research. Teaching duties not excessive. Apply to Dr. C. B. Weld, Head, Department of Physiology, Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia, Canada.

MEDICAL EDUCATION CO-ORDINATOR: Thoroughly progressive midwestern private general hospital seeks a full-time M.D. possessing extraordinary knowledge of the basic sciences, disease entities, teaching responsibilities plus capacity to utilize qualified members of present staff. Must have experience of teaching principles as applied to intern and resident programs in hospitals, university medical schools or non-university teaching hospitals. Address: V-107.

PREVENTIVE MEDICINE: Full-time appointment, with epidemiologic orientation desired

for teaching program with opportunities for research participation and development. Some background in public health or community organization desirable. Interest in teaching should be primary. Rank and salary based on qualifications and ability. Address, Jonas N. Muller, M.D., Chairman, Department of Preventive Medicine, New York Medical College, Fifth Avenue at 106th Street, New York 29, N. Y.

CLINICIANS-MEDICAL EDUCATORS: Short term visiting clinical faculty needed by U.S. Midwestern school of medicine to serve as lecturers at overseas postgraduate medical sciences institute, and to lecture on tour of medical colleges and hospitals of this Middle Eastern country. University Contract-U.S. Technical Aid Program. Need for clinical professors in various fields, well-oriented in basic medical sciences. Mature years and teaching experience essential. Appointment for any three month period beginning February, 1961 through May, 1962, exclusive of June, July, August. Salary, cost of travel by air, and limited allowances. Address: V-108.

PATHOLOGISTS-TRAINING OR STAFF POSITIONS: Expanding Medical Center, new physical plant. Opportunities for future academic, service, or research positions. Reasonable stipends based on individual qualifications. Contact Dr. E. G. Stuart, West Virginia University Medical Center, Morgantown, West Va.

PHARMACOLOGIST: Positions open on medical school faculty for July 1, 1961. Rank of instructor or assistant professor, depending on qualifications. Teaching responsibilities limited to nursing students and small medical classes. Active graduate training program. Facilities available for independent research program. Address: Dr. Frank C. Ferguson, Jr., Dept. of Pharmacology, Albany Medical College, Albany 8, N. Y.

PHYSIATRIST: To assume direction of department of physical medicine and rehabilitation of Mount Sinai Hospital, with teaching responsibilities at affiliated Chicago Medical School. Affiliated with Rest Haven Rehabilitation Hospital. Will also be consultant to affiliated Homes for the Aged. Challenging opportunity for a Board Qualified or Board Eligible Psychiatrist interested in developing a complete program including a residency in P M & R. Apply: Director, Mount Sinai Hospital, Chicago 8, Ill.

INTERNSHIP: To direct Pulmonary Disease Section of a large general hospital closely affiliated with medical school. Faculty appointment. Broad clinical research, and teaching opportunities. Active pulmonary function laboratory. Contact: Chief, Medical Service, V.A. Hospital, Albany, N. Y.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

PATHOLOGIST: Age 37. Certified in clinical and anatomical pathology. Presently on medical school faculty. Desires to combine directorship of hospital laboratory with teaching or hospital educational program. Administrative experience. Address: A-469.

SURGEON—THORACIC: Age 35, four children. M.D., 1951. A.O.A. Medical school residency five years. Diplomate American Board of Surgery and Thoracic Surgery. F.A.C.S. Desires position in surgical department of medical school, with emphasis on teaching and clinical work with opportunity for research. Wishes to locate in Southeastern section of U.S. Address: A-470.

PARASITOLOGIST—PUBLIC HEALTH: Ph.D., M.S. (Zoology), M.S.P.H. Age 32, married. Desires permanent position involving teaching and research. Experience includes teaching medical parasitology and bacteriology. Currently at work on a full year post-doctoral training program in parasitology. Available July 1, 1961. Address: A-471.

SURGEON: Age 34, M.B., B.S. (Univ. of London), F.R.C.S. (England). Wide experience in general surgery and teaching. Eight years postgraduate training in teaching hospitals, including one year in basic science and research and one year as surgical resident in Canadian teaching hospital. Seeks full-time surgical appointment in U.S. medical school. Address: A-472.

PEDIATRIC CARDIOLOGIST: Age 39, qualified for examination by American Board of Pediatric Cardiology. Now full-time, desires half-time university appointment. Catheterization laboratory necessary. Address: A-474.

MEDICAL ADMINISTRATOR: Harvard trained, Ph.D. Seeking position as medical school administrator-graduate school Dean. Board experience in administration, teaching, research and writing. Author and co-editor of several well-known medical books. Vast experience in basic subjects and clinical subjects at Harvard and Harvard hospitals. Numerous publications. Address: A-475.

PHYSICIAN-PHYSIOLOGIST: M.D., Ph.D. Age 50. Extensive experience in cardiopul-

monary research, clinical and laboratory; teaching and administration; numerous publications; research grants. Desires position with responsibility to develop research and teaching program. Address: A-476.

PHYSICIAN: M.D., D.P.H. Extensive experience in epidemiological research, teaching and administration in academic and health department settings. Published articles; book in preparation. Seeks senior university appointment offering opportunities in broad field of preventive medicine. Address: A-477.

INTERNIST: M.D., Ph.D. Currently Assistant Professor of Medicine with administrative and teaching responsibility for attending and house staff and medical students on large medical service. Active, well-supported, independent research program. Training includes NIH and the University of Chicago. Numerous publications. Desires geographic full-time position or equivalent in medical school or affiliated hospital with facilities for expanding both clinical and laboratory aspects of research program. Address: A-478.

INTERNIST: Certified; also certified in cardiovascular disease. Experience in medical school teaching as assistant professor at student, intern, resident and practicing physician level. Desires full-time position in teaching or community hospital and/or medical school. Address: A-479.

INTERNIST-CARDIOLOGIST: Board certified. Age 35. One year training in clinical cardiology and one year in cardiovascular laboratory—Harvard and Mayo Clinic. Now university instructor in England, returning shortly to U.S. Interested in practice, teaching, director of medical education. Address: A-480.

PATHOLOGIST: Age 56. Voluntarily retiring as professor and department head, University Medical Center, July 1, 1961. Twenty years teaching experience. Thoroughly experienced in service work. Desires position as teacher combined with service work, preferably surgical pathology. Address: A-481.

PATHOLOGIST—ADMINISTRATOR: Pathologist with excellent full-time academic background in administration, medical education, research and service responsibilities. Experience includes professorship and

chairman department of pathology, development of research, curriculum, teaching methods, services, and coordinated medical school activities. Extensive publications. Desires teaching position with opportunity to aid in development. Eastern location preferred. Address: A-482.

INTERNIST: Certified. Age 35. Currently on faculty of Eastern medical school. Experience in private practice and administrative medicine. Desires appointment in teaching hospital and/or medical school with opportunities for clinical research in cardiovascular disease, teaching and administrative responsibilities. Address: A-483.

PSYCHIATRIC SOCIAL WORKER: Female, M.S., personal psychoanalysis. Three years experience in delinquency problems. Current appointment in medical school involves participation in clinical and teaching program in department of psychiatry. Desires similar position or other psychiatric clinical appointment. Southern California preferred. Available July 1, 1961. Address: A-484.

INTERNIST: Age 34, single, male. Currently on faculty of British Colonial medical school. Postgraduate training in clinical medicine and research. Experience in cardiac catheterisation and haemodynamic investigations; also in life insurance medicine and some private consultative practice. Numerous publications. Desires faculty appointment or fellowship with opportunity for cardiological investigation. Address: A-485.

OBSTETRICIAN-GYNECOLOGIST: Age 35, PBK. AOA. Desires head administrative appointment in medical school or affiliated hospital, with opportunity to develop department. Ability in creative research, teaching, and operative gynecology. Institution must allow to be earned or pay a minimum of \$30,000. Address: A-486.

SURGEON-THORACIC: Age 34. Currently engaged in thoracic surgery residency training which includes all phases of pulmonary resectional surgery. Wide experience in heart surgery. Desires full-time medical school appointment, balanced between teaching, research, and dog laboratory research. Address: A-487.

MICROBIOLOGIST: Ph.D. Many years experience in clinical bacteriology and mycolo-

gy. Excellent background in parasitology and virology. Well qualified in many phases of public health microbiology. Medical school and A.S.C.P. teaching experience as well as administrative responsibilities. Publications. Desires challenging appointment in medical school. Address: A-488.

ANATOMIST: Ph.D. Male, age 43. Fifteen years teaching experience. Currently assistant professor teaching neuroanatomy and gross anatomy in school of medicine and dental medicine. Also experienced in histology and physiology. Trained in educational methods and testing. Desires opportunity for teaching and research in anatomy department or in a correlated pre-clinical medical program. Address: A-489.

OBSTETRICIAN-GYNECOLOGIST: M. B. B. S., India, F.R.C.S. Canada, university trained in U.S., immigrant to U.S. Desires teaching position, department of obstetrics and gynecology of a hospital with active educational program. Address: A-490.

MEDICAL PHOTOGRAPHER: A.B., age 35. Ten years experience in medical photography (including 7 years with Veterans Administration). Special training in photomicrography. Fluent knowledge of German. Desires position with medical school and/or hospital affiliated with medical school. Good references. Resumé and references on request. Address: A-491.

PHYSIOLOGIST-PHARMACOLOGIST: M.D., age 31. Desires research position in the fields of neurophysiology or neuropharmacology. At present postdoctoral fellow in Eastern medical school. Address: A-492.

PHYSIOLOGIST: Ph.D., assistant professor. Long-term research program with staff of four based on continuing large NIH grants. Basic and clinical aspects of endocrine physiology. Major physiology teaching responsibilities and experience. Seeks associate professorship in physiology. Address: A-493.

PHARMACOLOGIST: M.D., Punjab University, India. Age 27, married, one child. Publications, *Ind. J. Med. Sc.* and *J. Am. Pharm. Assn.* Presently research assistant, department of pharmacology, University of Agra. Desires position with U.S. medical school with opportunity for post-doctoral study. Address: A-494.

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nearly identical to mother's milk . . .

• in caloric distribution of protein, fat and carbohydrate • in vitamin pattern (vitamin D added in accordance with NRC recommendations) • in osmolar load • in ratio of unsaturated to saturated fatty acids • in absence of measurable curd tension . . . enhances digestibility

1. Macy, I. G.; Kelly, H. J., and Sloan, R. E.: with the Consultation of the Committee on Maternal and Child Feeding of the Food and Nutrition Board, National Research Council: The Composition of Milks. Publication 234, National Academy of Sciences and National Research Council, Revised 1953. 2. Brown, C. W.; Tuholski, J. M.; Sauer, J. L. W.; Minsk, L. D., and Rosenstern, I.: Evaluation of Prepared Milks in Infant Nutrition; Use of the Latin Square Technique, J. Pediatr. 56:391 (Mar.) 1960.



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